

AD-A083 000 DEFENSE TECHNICAL INFORMATION CENTER ALEXANDRIA VA
SOLAR ENERGY. (U)

SOLAR ENERGY. (U)

APR 80

F/S 10/1

UNCLASSIFIED DTIC/BIB-80/01

NL

1 of 2
AN
AOR 3000

AD
AOR 3000

AD - A093 000

LEVEL II UNCLASSIFIED

30

DTIC

DTIC/BIB- 80-01

SOLAR ENERGY

A DTIC BIBLIOGRAPHY

DTIC-TOS
Cameron Station
Alexandria, Va. 22314

APRIL 1980

Approved for public release;
distribution unlimited.

DTIC
ELECTE
APR 18 1980
S D

DDC FILE COPY

DEFENSE TECHNICAL INFORMATION CENTER
DEFENSE LOGISTICS AGENCY
Cameron Station
Alexandria, Va. 22314

UNCLASSIFIED

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER DTIC/BIB-80/01	2. GOVT ACCESSION NO. AD-A083 000	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) SOLAR ENERGY.		5. TYPE OF REPORT & PERIOD COVERED Bibliography Jan 1955 — Sep 1979.
7. AUTHOR(s)		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Defense Technical Information Center Cameron Station Alexandria, Virginia 22314		8. CONTRACT OR GRANT NUMBER(s) 12/1801
11. CONTROLLING OFFICE NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS PE 65601S
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE 11 Apr 1980
		13. NUMBER OF PAGES 185
		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Distribution Statement A; Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) * Solar Energy Solar Panels Power Levels * Bibliographies Solar Collectors Solar Heating * Energy Conversion Solar Generators Solar Furnaces Solar Cells Power Supplies Solar Radiation Electric Power Production		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This bibliography is a selection of unclassified and unlimited distribution references on Solar Energy. These citations of reports present information on performance characteristics, fabrication, development of power levels and energy conversion. Four computer-generated indexes are provided. 344101		

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

19. Con't

Identifiers and/or open-ended terms

Photovoltaic Cells
Photovoltaic Power
Solar Arrays
Interplanetary Energy Flux
Biomass Energy Conversion
Solar Cooling
Solar Models

Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DDC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	<input type="checkbox"/>
By	<input type="checkbox"/>
Distribution/	<input type="checkbox"/>
Availability	<input type="checkbox"/>
Dist.	Avail and/or special
A	

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

F O R E W O R D

This unclassified and unlimited bibliography contains 238 selected citations on reports on *Solar Energy*.

Research and development in the field of solar energy is sorely needed. Its importance is highlighted by the current energy crisis in this nation and the rest of the world. This bibliography compiles information on research and development that has already been accomplished. By using these studies as the basis for a rigorous review and analysis, solar energy may emerge as a practical, albeit partial, solution to the energy crisis.

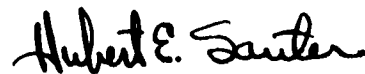
These citations were taken from entries processed into the Defense Technical Information Center's data bank during the period of January 1955 to January 1980.

This report supersedes DDC report bibliography on Solar Energy, AD-A038600, DDC/BIB-77/03, dated April 1977.

Individual entries are arranged in descending AD number sequence. Computer generated indexes of Corporate Author/Monitoring Agency, Subject, Title, and Personal Author.

BY ORDER OF THE DIRECTOR, DEFENSE LOGISTICS AGENCY

OFFICIAL



HUBERT E. SAUTER
Administrator
Defense Technical Information Center

C O N T E N T S

FOREWORD iii

AD BIBLIOGRAPHIC REFERENCES 1

INDEXES

CORPORATE AUTHOR/MONITORING AGENCY 0-1

SUBJECT D-1

TITLE T-1

PERSONAL AUTHOR P-1

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A078 653

13/1

CIVIL ENGINEERING LAB (NAVY) PORT HUENEME CA

Solar-Powered Sun Tracker. (U)

DESCRIPTIVE NOTE: Final rept. Feb 77-Sep 79.

JUN 79 33p

Ward, Carter J. ;

REPT. NO. CEL-TN-1556

PROJ: F57571

TASK: ZF57571001

UNCLASSIFIED REPORT

DESCRIPTORS: *Positioning devices(Machinery),

*Solar energy, *Tracking, Passive systems,

Boilers, Costs, Economic analysis

IDENTIFIERS: Solar tracking, Sun trackers,

WU01010, PE62765N (U)

A solar-powered sun tracker believed to be capable of repositioning equipment to within 1 degree of the angle-of-incident radiation is described in this report. The proposed tracker is designed to reposition itself automatically after cloudy periods and should prove inexpensive as well as reliable. Included in this report are (1) a description of two tracker concepts, (2) a derivation of the heat-balance equation used to predict work available for equipment rotation, (3) a discussion of the experimental model fabricated to prove concept feasibility, and (4) an economic analysis comparing the cost of generating steam with a solar-powered boiler with the cost of generating steam with a coal-fired boiler. (Author) (U)

AD-A078 653

UNCLASSIFIED

PAGE

1

AD-A078 144

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A078 144

20/8

3/2

VIRGINIA UNIV CHARLOTTESVILLE DEPT OF CHEMISTRY

The Step Excitation Method for Studying
Reversible Excited-State Electron-Transfer
Reactions: Experimental Realization. (U)

APR 79 4P Taylor, David G. ; Demas, James N. ;

CONTRACT: AFOSR-78-3590, NSF-CHE77-20379

PROJ: 2303

TASK: B2

MONITOR: AFOSR TR-79-1077

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Chemical
Physics, v71 n2 p1032-1033, 15 Jul 79.

DESCRIPTORS: *Electron transport, *Solar energy,
Excitation, Microcomputers, Data acquisition,
Reprints

IDENTIFIERS: WUAFOSR230382, PE61102F (U)

Reprint: The Step Excitation Method for Studying
Reversible Excited-State Electron-Transfer
Reactions: Experimental Realization. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD-A078 118 10/3
NEW MEXICO UNIV ALBUQUERQUE ERIC H WANG CIVIL ENGINEERING
RESEARCH FACILITY

Survivability of Remote Site Alternate
Energy Systems. Volume I. Survivability
Analysis. (U)

DESCRIPTIVE NOTE: Final rept. Sep 78-Mar 79.
SEP 79 84P Scheuch, Karl E.; Baird,
Glenn T.;
CONTRACT: F29601-76-C-0015
PROJ: 2103
TASK: 80
MONITOR: AF 3C/ESL TR-79-21-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-8042

322L. DESCRIPTORS: *Power supplies, *Solar cells,
*Electric batteries, *Auxiliary power plants,
*Survival(General), Remote areas, Early warning
systems, Threats, Reliability, Maintenance,
Costs, Planning, *Meteorological data, Radar
stations, Systems analysis, Long range(Time),
Operation, Acquisition, Feasibility studies,
Gallium arsenides, Photovoltaic effect, Fuels
IDENTIFIERS: Survivability analysis, Alternate
energy systems, Gallium arsenide batteries,
Photovoltaic cells. WUESL21038006, PE63723F

As a result of increasing fuel costs and decreasing
reserves, the USAF is studying the possibility of
providing power to remote sites by means of alternate
energy sources. Remote sites are identified and
categorized. Several alternate energy sources are
examined with respect to reliability,
maintainability, and survivability against natural
and man-made threats. Energy storage devices are
also studied, and a final decision matrix is
developed which relates these findings. (Author) (U)

AD-A078 118

UNCLASSIFIED

PAGE

2

AD-A077 684

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD-A077 684 20/2 10/2 7/4
SPECTROLAB INC SYLMAR CALIF

Low Resistivity-High Minority Carrier
Lifetime Single Crystal Silicon
Investigation. (U)

DESCRIPTIVE NOTE: Interim technical rept. Jul 77-Sep
78.
APR 79 50P Stella, Paul M.; Opjorden,
R. W.;
CONTRACT: F33615-77-C-2045
PROJ: 2308
TASK: 53
MONITOR: AFAPL TR-79-2031

UNCLASSIFIED REPORT

DESCRIPTORS: *Single crystals, *Solar cells,
*Silicon, *Life expectancy, *Charge carriers,
Space systems, Power supplies, Photovoltaic
effect, Measurement, Purity, Fabrication,
Gettering, Test and evaluation, Ion implantation,
Wafers, Crystal growth, Phosphorus, Electrical
resistance, Irradiation, Proton beams, Electron
beams, Boron compounds
IDENTIFIERS: High minority carriers, Low
resistivity materials, Photovoltaic power, Ingots,
PE61102F, WUAFAPL23085301 (U)

The objective of this program is to improve the
performance of N+/P silicon solar cells by
improving the minority carrier lifetime of moderate
to low resistivity silicon material. The behavior
of cells fabricated from improved material will be
demonstrated by measuring electrical output without
irradiation and after 1 Mev electrons and 10 Mev
proton irradiation. This report discusses the
first fifteen months' efforts toward developing and
evaluating a new solar cell silicon material.
During this time period, equipment and techniques
for material growth have been developed along with
analysis of methods for removing impurities from non-
ultra pure silicon after wafer fabrication. Five
preliminary ultra pure ingots have been grown using
boron ion implantation and a single ingot using
elemental gallium to provide the p dopant.
Results are presented for solar cells made from the
ingots. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A077 112 10/2 9/5 9/1
 ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND DOVER NJ
 MANAGEMENT INFORMATION SYSTEMS DIRECTORATE

The Application of DC-DC Energy Conversion
 in a Solar Energy System. (U)

DESCRIPTIVE NOTE: Final rept.,
 SEP 79 155P Tobak, John P. ;
 REPT. NO. ARMD-TR-78002
 MONITOR: SBIE AD-E400 363

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy conversion, *DC to DC
 converters, *Voltage regulators, Voltage
 amplifiers, Photovoltaic effect, Feedback,
 Electronic multipliers, Solar energy, Gain,
 Efficiency, Switching, Electrical loads,
 Semiconductors, Computer aided design,
 Prototypes

IDENTIFIERS: Series switching (U)
 (U)

Expressions of voltage gain, current, and
 efficiency are developed for each of five different
 methods of DC-DC energy conversion. One of the
 five methods is selected as the design model for a
 prototype converter to be used in solar energy
 applications. Both the prototype's performance and
 the test methods employed are described.
 Efficiencies as high as 86% are measured along with
 a constant voltage line regulation of 0.04 volts per
 volt and a constant voltage load regulation of 0.034
 volts per ohm. The prototype acts as a constant 12-
 volt power supply capable of delivering up to 10-amp
 currents. (Author) (U)

AD-A077 112

UNCLASSIFIED

PAGE

3

AD-A076 836

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A076 836 3/2 10/2 9/2
 NAVAL POSTGRADUATE SCHOOL MONTEREY CA

Solar Energy Design Improvement: A
 Methodology for Hydronic Flat Plate
 Collector Systems. (U)

DESCRIPTIVE NOTE: Master's thesis,
 SEP 79 235P Kozoyed, Lawrence William ;

UNCLASSIFIED REPORT

Availability: Document partially illegible.
 DESCRIPTORS: *Solar energy, *Flat plate models,
 *Experimental design, *Collection, *Methodology,
 Automation, Optimization, Parameters, Systems
 analysis, Economics, Fortran,
 Performance(Engineering), Water, Variables,
 Machine coding, Computer programs, Theses,
 Fluids, Energy storage, Heat exchangers,
 Velocity

IDENTIFIERS: Flat plate collectors, Hydronic flat
 plate collectors (U)
 (U)

A methodology for solar energy system design
 improvement has been developed and coupled with a
 constrained function optimization code resulting in
 an automated solar energy system design procedure.
 The scope of the methodology is limited to systems
 using flat plate collectors and water as the working
 fluid. Eight parameters have been included as
 independent design variables. The design variables
 included collector area, collector tilt angle,
 collector and storage fluid stream velocities, and
 collector to storage heat exchanger dimensions. The
 procedure includes an accounting for economic
 parameters as an intimate part of the design process.
 The resulting methodology has been used for the
 design of solar energy systems which would use shelf
 item collectors for the purpose of determining the
 optimum design variable vector for a given situation.
 The methodology could also be used on a limited
 basis for collector design optimization by exploring
 the effects of changing selected collector parameters
 on system performance. The methodology is coded in
 the FORTRAN computer language under the name
 SOLQAD-1 (Solar Energy Optimization
 Analysis or Design). (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A076 612 3/2 3/1
STANFORD UNIV CA INST FOR PLASMA RESEARCHIs the Galactic Corona Produced by Galactic
Flares.

JUL 79 18P Sturrock, P. A. ;Stern,

Robert ;

REPT. NO. SU-IPR-780

CONTRACT: N00014-75-C-0673, NAS8-33012

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Sponsored in part by Grant Nos.
NGL-05-020-272 and NGR-05-020-668.DESCRIPTORS: *Astrophysics, *Solar flares,
Galaxies, Magnetic fields, Solar energy, Energy
transfer, Data acquisition, Coronas, Photospher

We consider the effect of the differential rotation of the disk of the Galaxy on magnetic field which penetrates the disk. The magnetic field will be progressively distorted from a potential (current-free) form and will at some stage become unstable. We expect, from knowledge of solar flares, that an MHD instability, a resistive instability, or a combination of the two, will result in the release of the excess magnetic energy and that part of the released energy will be converted into heat. By estimating the energy release and the rate at which this process will occur and by assuming that this energy input is balanced by radiation, we obtain estimates of the parameters of the resulting plasma. It appears that this process alone can heat a galactic corona to temperatures of order 1,000,000 K. (Author)

(U)

AD-A076 612

UNCLASSIFIED

PAGE

4

AD-A075 097

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A075 097 5/2
OFFICE OF NAVAL RESEARCH LONDON (ENGLAND)European Scientific Notes. Volume 33.
Number 7,

JUL 79 54P Kaufman, I. ;Newton,

Victoria S. ;

REPT. NO. ESN-33-7

UNCLASSIFIED REPORT

DESCRIPTORS: *Foreign technology, Reports, Airships, Chemistry, Computer aided design, Computer programming, Electric batteries, Solar energy, Fluid dynamics, Materials, Low alloy steels, Medical research, Oceanography, Injection lasers, Western Europe, Egypt, NATO

This monthly publication presents brief articles concerning recent developments in European scientific research. It is hoped that these articles (which do not constitute part of the scientific literature) may prove of value to American scientists by calling attention to current developments and to institutions and individuals engaged in these scientific efforts. The articles are written primarily by members of the staff of ONRL. Topics in this issue include: La Renaissance du Dirigeable - A solution in search of a problem; Chemistry at Swiss Universities; Formal Design Methodology - How to design computer systems without really using your head; UK Battery Research -- Air Force; Solar Energy in Greece and Egypt; Fluid Dynamics at the Technische Hogeschool Delft; The Institut fuer Hydromechanik at the University of Karlsruhe; Materials Research at Leicester, Loughborough, and Leeds; High Strength Low Alloy Steels; Preoperative Hypothermic Renal Perfusion -- Another use for the arterial catheter; and Semiconductor Injection Lasers.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD-A074 968 7/4 10/3 7/5
BOSTON UNIV MASS DEPT OF CHEMISTRY

Photosensitization Mechanisms for Energy
Storing Isomerizations. (U)

DESCRIPTIVE NOTE: Technical rept. no. 10, 1 Nov 75-28
Feb 79, JUL 79 32p Jones, Gulliford, II; Xuan,
Phan Thanh; Chiang, Sheau Hwa;
CONTRACT: N00014-76-C-0442

UNCLASSIFIED REPORT

DESCRIPTORS: *Photochemical reactions,
*Photosensitivity, *Energy storage,
*Isomerization, Solar energy, Valence, Addition
reactions, Visible spectra, Light, Energy trans
IDENTIFIERS: Photoisomerization, (U)
Photosensitization, Intramolecular cycloaddition
reactions, WUNR051-574 (U)

The results of a study of photochemical storage of
radiant energy in organic molecules are reviewed and
prospects for the reversible storage of solar energy
outlined. A number of intramolecular cycloaddition
reactions are identified as candidates for efficient
photochemical energy storage and findings concerning
the mechanisms of these reactions are discussed.
Strategies for the photosensitization of reactions
to visible light are evaluated. The use of
wavelengths past 500 nm is demonstrated for an energy
storing isomerization which is efficiently driven by
a triplet energy transfer mechanism. (Author) (U)

AD-A074 968

UNCLASSIFIED

PAGE

5

AD-A074 915

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD-A074 915 10/3 7/4 7/2
BOSTON UNIV MASS DEPT OF CHEMISTRY

Energy Storing Organic Photoreactions. (U)

DESCRIPTIVE NOTE: Final rept. 1 Nov 75-28 Feb 79,
AUG 79 11p Jones, G., II;
CONTRACT: N00014-76-C-0442

UNCLASSIFIED REPORT

DESCRIPTORS: *Photochemical reactions, *Energy
storage, *Organic compounds, Organic chemistry,
Photons, Photosensitivity, Solar energy,
Isomerization, Charge transfer, Complex compounds,
Valence, Alkenes, Quantum efficiency, Electron
donors (U)
IDENTIFIERS: Photoisomerization, Photon energy,
Photoaddition reactions, Valence bonds, Cyclo
addition reactions, Excimers, Biradicals,
Photodimerization reactions, WUNR051574 (U)

Results of a study of energy storing organic
photoreactions are summarized. Discussion includes
criteria for efficient photon energy storage, quantum
yield and other quantitative results for a variety of
photoisomerization and photoaddition reactions, the
nature of intermediates for these photoreactions,
photochemistry of charge-transfer complexes, and
prospects for photochemical storage of solar energy.
(Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A074 893 10/2
COAST GUARD RESEARCH AND DEVELOPMENT CENTER GROTON CT

Evaluation of Solar Photovoltaic Arrays for
Use on Marine Aids to Navigation. (U)

DESCRIPTIVE NOTE: Final rept. May 74-Jul 78,
MAR 79 32P Kostuk, R. K. ;
REPT. NO. CGR/DC-7/79
MONITOR: USCG D-43-79

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar cells, *Power supplies,
Navigational aids, Solar energy, Arrays,
Photovoltaic effect, Remote systems, Buoys
IDENTIFIERS: Solar arrays (U)
(U)

During the period from May 1974 to July 1978,
four test and evaluation programs of solar
photovoltaic arrays were conducted to evaluate the
potential of these energy sources for use on marine
aids to navigation. Array testing consisted of:
long-term rooftop exposure; field deployment on buoys
in Alaska, Florida, and Massachusetts; field
deployment on buoys in Long Island Sound; and
initial development of a screening test to evaluate
performance in a short time frame. The results of
these tests are presented. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A074 869 10/2 10/3 10/1
DAYTON UNIV OHIO SCHOOL OF ENGINEERING

Analysis of Remote Site Energy Storage and
Generation Systems. (U)

DESCRIPTIVE NOTE: Final technical rept. Jul 78-Jun 79.
JUL 79 148P Crisp, J. N. ; Bishop, W.
S. ; Pinson, J. D. ; Anderson, L. A. ;
REPT. NO. UDSE-TR-79-35, UDSE-TR-79-02
CONTRACT: F33615-77-C-2004
MONITOR: AFESC/ESL TR-79-20

UNCLASSIFIED REPORT

DESCRIPTORS: *Electric power production, *Wind
machines, *Energy storage, *Storage batteries,
Remote areas, Turbogenerators,
Performance (Engineering), Cost analysis,
Operational readiness, Experimental design,
Comparison, Solar energy, Thermal power plants,
Hydrogen oxygen fuel cells, Thermionic power
generation, Photovoltaic effect (U)

This report presents the results of an
investigation and analysis of energy storage systems
and alternate energy sources for remote site
applications. The first phase of the effort
centered on the broad based study of hydrogen
storage, thermal storage, batteries, and flywheels as
energy storage systems along with wind turbine, solar
photovoltaic, and solar thermionic energy converters.
A wind turbine battery system was recommended based
on performance, cost and availability. Effort under
the second phase of the program concentrated on a
system using two separate nominal eight kilowatt wind
turbine modules in conjunction with a lead-acid
battery energy storage unit. The system was
specified to operate in conjunction with an existing
power grid system located at Bar Main, Barter
Island, Alaska. Specific system concepts and
recommendations are presented with supporting
analyses. A design checklist is included with
specific items for consideration in the preparation
of a design specification. (Author) (U)

AD-A074 893

UNCLASSIFIED

PAGE 6

AD-A074 869

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A073 190 5/1 5/2 5/3 9/2
10/1

NAVAL POSTGRADUATE SCHOOL MONTEREY CA

Technology Transfer in Science, Technology
and Public Policy. (U)78 100P Jolly, J. A. ; Creighton, J.
W. ; Moore, Bonita M. ;
REPT. NO. NPS-54CF77121

UNCLASSIFIED REPORT

DESCRIPTORS: *Technology transfer, *Public
administration, *Research management, Policies,
Economics, International relations, Communist
countries, Food, Climate, Population, Computer
applications, Solar heating

Contents: Technological Interactions with
Public Policy; Technology and Economics;
Problems or Answers; Technology--No Policy
for Grants; International Technology
Transfer--Ramifications Concerning Communist
Bloc Nations; The Effect of Climate on
Food Production and Population; World
Population Explosion--A Technological, Not
Fertility, Crisis; The Computer--It
Leadeth Man to Think; Computers, Privacy,
and the American Public; Product Liability,
and How the Engineer and Small-Business
Manager Can Be Prepared; and Solar
Heating of Homes--A Technology
Assesment .

(U)

AD-A073 190

UNCLASSIFIED

PAGE

7

AD-A072 986

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A072 986 3/2
CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN
ILInvestigation of the Interrelationship between
Direct, Diffuse, and Total Solar
Radiation. (U)

DESCRIPTIVE NOTE: Special rept.,
JUL 79 25P Walton, George ;
REPT. NO. CERL-SR-E-155
PROJ: 4A161101A91D
TASK: 04

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar radiation, Diffusion, Solar
heating, Experimental data, Pyranometers, Thermal
diffusion, Altimeters, Solar energy, Data
acquisition, Horizontal orientation
IDENTIFIERS: PE61101A, WU058, AS91D

(U)
(U)

This report describes an investigation of the
relationship between total solar radiation on a
horizontal surface and its direct and diffuse
components. It is based on radiation measurements
taken in Champaign, IL in 1978. Good agreement
was found between the observed data and the SOLMET
correlation, which was published after this study
was begun. This report recommends use of the
SOLMET correlation for solar simulation programs.
(Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A071 676 5.3 13/13
FOREST PRODUCTS LAB MADISON WISEnergy Efficiency in Light-Frame Wood
Construction.

(U)

DESCRIPTIVE NOTE: Forest Service research paper,
79 62P Sherwood, Gerald E. ; Hans,
Gunsard E. ;
REPT. NO. FSRP-FPL-317

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Supersedes Rept. no. FSRP-FPL-
1740 and Rept. no. FSRP-FPL-86.
DESCRIPTORS: *Energy conservation, *Construction,
*Housing(Dwellings), Wood, Efficiency, Thermal
insulation, Heat transfer, Solar energy
IDENTIFIERS: Forest Products Laboratory,
*Energy efficient housing

(U)

(U)

This report presents information needed for design
and construction of energy-efficient light-frame wood
structures. The opening section discusses improving
the thermal performance of a house by careful
planning and design. A second section of the report
provides technical information on the thermal
properties of construction materials, and on the
basic engineering design principles applicable to
light-frame wood structures. Moisture condensation
problems are discussed in relation to the effects of
increased building insulation and more effective air
leakage control. (Author)

(U)

AD-A071 676

UNCLASSIFIED

PAGE

9

AD-A071 388

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A071 388 2/14 4/1
ALASKA UNIV FAIRBANKS GEOPHYSICAL INSTInterplanetary Energy Flux Associated with
Magnetospheric Substorms,

(U)

AUG 78 9P Akasofu, S.-I. ;
REPT. NO. UAG-CONTRIB-AE30
CONTRACT: F19628-76-C-0074, NSF-ATM74-23832
PROJ: 7663
TASK: 08
MONITOR: AFGL TR-79-0141

UNCLASSIFIED REPORT

Availability: Pub. in Planetary and Space
Science, v27 p425-431 1979.
DESCRIPTORS: *Geomagnetism, *Magnetosphere, Solar
wind, Energy, Astrophysics, Reprints
IDENTIFIERS: Magnetospheric substorms,
Interplanetary energy flux, PE62101F,
WUAFGL76630801

(U)

(U)

Reprint: Interplanetary Energy Flux Associated
with Magnetospheric Substorms.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A069 424 7/5
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LABElectrode Materials for the Photoelectrolysis
of Water.

(U)

DESCRIPTIVE NOTE: Journal article,
78 12P Mavroides, John G. ;
REPT. NO. JA-4880
CONTRACT: F19628-78-C-0002
PROJ: 649L
MONITOR: ESD TR-78-388

UNCLASSIFIED REPORT

Availability: Pub. in Materials Research
Bulletin, v13 n12 p1379-1388 1978.
DESCRIPTORS: *Photochemical reactions, *Water,
Electrolysis, Semiconductors, Electrodes,
Electrolytes, Solar energy, Energy conversion,
Reprints
IDENTIFIERS: PE65705F

Reprint: Electrode Materials for the
Photoelectrolysis of Water.

(U)

(U)

AD-A069 424

UNCLASSIFIED

PAGE

10

AD-A069 423

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A069 423 11/2
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LABSelective-Black Absorbers using Sputtered
Cermet Films.

(U)

DESCRIPTIVE NOTE: Journal article,
APR 78 11P Fan, John C. ;
REPT. NO. MS-4590
CONTRACT: F19628-78-C-0002
PROJ: 649L
MONITOR: ESD TR-78-379

UNCLASSIFIED REPORT

Availability: Pub. in Thin Solid Films, v54 p139-
148 1978.
SUPPLEMENTARY NOTE: Presented at the International
Conference on Metallurgical Coatings, San
Francisco, CA, 3-7 April 1978.
DESCRIPTORS: *Cermets, *Absorbers (Materials),
Blackbody radiation, Solar energy, Infrared
radiation, Gold, Magnesium oxides, Chromium
compounds, Sputtering, Reprints
IDENTIFIERS: PE65705F

(U)

(U)

Reprint: Selective-Black Absorbers using Sputtered
Cermet Films.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A069 319 10/2 20/12 13/8
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

Solar Cells: Plugging into the Sun.

(U)

DESCRIPTIVE NOTE: Journal article.

78 18P Fan, John C. ;

REPT. NO. JA-4854

CONTRACT: F19628-78-C-0002

PROJ: 649L

MONITOR: ESD TR-78-385

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Original contains color plates: All

DDC reproductions will be in black and white.

DESCRIPTORS: *Solar cells, Energy conversion, Photovoltaic effect, Fabrication, Costs,

Reprints

IDENTIFIERS: PE65705F

(U)

(U)

Reprint: Solar Cells: Plugging into the Sun.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A069 138 10/2 5/2
TETRA TECH INC ARLINGTON VA

Department of the Navy Energy Fact Book.

(U)

DESCRIPTIVE NOTE: Technical rept.

MAY 79 520P

REPT. NO. TETRAT-A-6054-79-403

CONTRACT: N00014-78-C-0434

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy, *Energy conservation, *Manuals, Naval planning, Fuel oil, Fossil fuels, Synthetic fuels, Petroleum industry, State of the art, Coal, Solar energy, Nuclear energy, Naval research

IDENTIFIERS: *Energy Fact Book, Petroleum

(U)

(U)

The Department of the Navy Energy Fact Book presents the U.S., including the DOD and Navy, energy situation; summarizes Navy energy R and D initiatives; provides an in-depth description of the various processes and developments related to hydrocarbon fuels, synthetic fuels, non-hydrocarbon energy sources, and energy conversion; and briefly describes energy R and D legislation and cooperative energy programs.

(U)

AD-A069 319

UNCLASSIFIED

PAGE

11

AD-A069 138

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A068 365 20/1 17/7
COAST GUARD RESEARCH AND DEVELOPMENT CENTER GROTON CTEconomic Analysis of Solar Photovoltaics for
Low-Power Lighted Aids to Navigation.

(U)

DESCRIPTIVE NOTE: Final rept.,

JUN 78 53P Allen, William R. ;

REPT. NO. CGR/DC-11/78

MONITOR: USCG D-23-79

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar cells, Low power, Navigational
aids, Photovoltaic effect, Coast Guard, Economic
analysis

(U)

A detailed economic analysis with decision-making criteria for converting the present energy storage system used on U.S. Coast Guard low-power lighted aids to navigation to one that relies upon conversion of solar energy by photovoltaics is presented. The analysis demonstrates that converting 12-volt lighted aids to navigation from reliance on primary air-cell batteries to reliance on solar photovoltaics is attractive from an economic point of view. However, questions concerning reliability and life must be answered before the Coast Guard plans conversion to solar photovoltaics. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A067 891 10/2 20/12
COAST GUARD RESEARCH AND DEVELOPMENT CENTER GROTON
CONNCoast Guard Marine Exposure Facilities for
Naturally Aging Solar Photovoltaic
Modules.

(U)

DESCRIPTIVE NOTE: Final rept.,

OCT 78 20P Giovane, Frank ;

REPT. NO. CGR/DC-20/78

MONITOR: USCG D-18-79

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar cells, *Semiconductors,
*Photovoltaic effect, Navigational aids, Coast
Guard research, Military facilities, Test
facilities, Solar energy, Energy conversion,
Acceptance tests, Electric power, Cold regions,
Hot regions, Site selection

(U)

A program to evaluate photovoltaics in the marine environment has been undertaken by the Coast Guard Research and Development Center. This effort aims at development of suitable screening and qualification tests for solar photovoltaic energy systems intended for powering low voltage lighted aids to navigation. To assist in the attainment of these goals, two facilities have been established in proximity to the sea. One located at Avery Point, Groton, Connecticut, is characteristic of a northern marine climate with frequent frosts and cold winter cycles. The other, located in the south, at CG Station Fort Lauderdale, Dania, Florida, is characteristic of a southern marine climate with no frost cycles and relatively year round constant temperatures. Together, they nominally represent the extremes of climate under which the Coast Guard deploys aids to navigation. The two sites offer the Coast Guard a unique facility from which to access the reliability of solar photovoltaic energy system components in the marine environment, and to generate data essential to determining their cost-reliability relations.

(U)

(Author)

AD-A068 365

UNCLASSIFIED

PAGE

12

AD-A067 891

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A066 780 3/2
TUFTS UNIV MEDFORD MASS DEPT OF PHYSICS

Very Large Array (V.L.A.) Observations
of Solar Active Regions.

(U)

DESCRIPTIVE NOTE: Rept. for 15 Oct 78-1 Feb 79.

FEB 79 19P Lang, Kenneth R. ;

REPT. NO. SCIENTIFIC-1

CONTRACT: F19628-79-C-0010

PROJ: 2311

TASK: G3

MONITOR: AFGL TR-79-0037

UNCLASSIFIED REPORT

DESCRIPTORS: *Radio astronomy. *Radio interferometry. *Solar activity. *Solar corona. Antenna arrays. Solar flares. Radio interferometers. Photosphere. Magnetic fields. Sunspots. Solar disturbances. Solar energy IDENTIFIERS: WUAFGL2311G3BD, PE61102F

(U)

(U)

High resolution radio wavelength observations of solar active regions indicate even present, fine scale features whose high degree of circular polarization reflects the magnetic field structure in the solar corona. Changes in this structure may trigger major flare eruptions in solar active regions which create geophysical disturbances and disrupt terrestrial communication and surveillance systems. In this paper we discuss the basic techniques of using the Very Large Array (V.L.A.) to obtain radio wavelength observations (6 cm) maps of solar active regions. It is shown that the V.L.A. coverage in the u-v plane (the Fourier plane of the active region's brightness distribution) is much more complete than the u-v coverage available with other synthesis telescopes or with interferometers with east-west baseline configurations. Calibration procedures for V.L.A. observations of the Sun are discussed, and maps of two solar active regions are presented. For the first time radio wavelength maps of coronal magnetic field structures have been obtained with angular resolutions comparable to those obtained at optical wavelengths when viewing the cooler, lower lying photosphere.

(U)

AD-A066 780

UNCLASSIFIED

PAGE

13

AD-A066 699

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A066 699 13/1
CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

The performance of an Experimental Solar Heating System.

(U)

DESCRIPTIVE NOTE: Interim rept.,

FEB 79 26P Juncich, D. M. ; Leverenz, D.

J. ; Johnson, D. L. ;

REPT. NO. CERL-IR-e-144

PROJ: 4A762731AT41

TASK: T6

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar heating. *Performance (Engineering). Solar energy. Energy conversion. Heat transfer. Experimental design. Test facilities. Collecting methods. Army Corps of Engineers. Residential section. Housing (Dwellings) IDENTIFIERS: PE62731A, WU021, AST41

(U)

(U)

This report describes the performance of a residential-scale, completely instrumented solar heating system located at the U.S. Army Construction Engineering Research Laboratory (CERL), Champaign, IL. The investigation was made between January 1977 and April 1978. In addition, a daily profile of the performance of the system and its components is presented for a representative sunny winter day. An analysis of the solar system operation indicated that the collector array is by far the most inefficient component in the system for converting incident solar energy into useful heat. The solar system consists of 20 sq m (220 sq ft) of flat-plate, selective surface, singly glazed solar collectors and a 7.6 cu m (2000 gal) equivalent hot water storage tank. The storage system supplies hot water for heating a 50 sq m (540 sq ft) building used by CERL as office space. There is no domestic hot water in the building. Auxiliary energy is supplied by an electric, flow-through hot water heater. The results of this research are presented in terms of mean daily averages for each month during the heating season and include instantaneous solar radiation (horizontal and in the plane of the collector), useful heat acquired by the collector.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A066 616 10/2 12/1
 HUGHES AIRCRAFT CO LOS ANGELES CALIF SPACE AND
 COMMUNICATIONS GROUP

High Efficiency GaAs Solar Cell
 Development.

DESCRIPTIVE NOTE: Final rept. 1 Aug 76-1 Jul 78.

JAN 79 106P Kamath,S.; Wolff,G.;

CONTRACT: F33615-76-C-2121

PROJ: 3145

TASK: 19

MONITOR: AFAPL TR-78-96

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar cells, *Mathematical models,
 Gallium arsenides, Space propulsion, Solar energy,
 Energy conversion, Radiation resistance,
 Junctions, Epitaxial growth, Melts, Temperature,
 Humidity, Test methods, Packaging, Pilot plants,
 Industrial production

IDENTIFIERS: WUAFAPL31451961, PE62203F

The major goals of the High Efficiency
 Gallium Arsenide (GaAs) Solar Cell
 program have been met. An AMO efficiency of 17.5
 percent was achieved. During the second phase of
 the program, was optimized to improve radiation
 resistance of the cell without loss of efficiency,
 thus improving the suitability of the cell for space
 missions. (U)

(U)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A066 385 10/2 13/10
 NAVAL OCEAN SYSTEMS CENTER SAN DIEGO CA

Performance of Photovoltaic Cells in an
 Undersea Environment.

DESCRIPTIVE NOTE: Final rept. Mar-Oct 78.

JAN 79 44P

REPT. NO. NOSC/TR-359

PROJ: F61512

TASK: ZF61512001

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: *Photoelectric cells(Semiconductor),
 *Solar cells, *Marine engineering, Underwater,
 Electric power production, Silicon, Submersible

(U)

Photovoltaic solar cells can serve as a reliable
 source of electric power for electronic
 instrumentation in temporarily or permanently
 submerged marine systems in the form of bottom
 installations, buoys, or remotely controlled unmanned
 vehicles. The power output of submerged solar cells
 is a function of solar insolation intensity on the
 water surface, depth of submersion, optical
 properties of water, temperature, and the orientation
 of the cell surface with respect to the sun.
 Experimental data were generated by submerging
 solar cell panels in different bodies of water with a
 2.5- to 95-ft visual contrast limit, as defined by
 the observation of a submerged, standard, 12-in
 Secchi disc, and measuring their performance under
 upward-facing, photovoltaic cells submerged to the
 visual contrast limit depth was found to be a
 constant, equal to approximately 5 to 10 percent of
 the power generated by upward-facing, horizontally
 oriented cells in an atmospheric environment. The
 power output of the cells increased at lesser depths,
 until in the splash zone the output was essentially
 the same or higher than in the atmospheric
 environment. Based on these findings it can be
 concluded that high-efficiency silicon solar cells
 can serve as a practical electrical power supply in
 electronic devices for marine applications, if their
 depth of submersion is less than the visual contrast
 limit at the dive location. (U)

AD-A066 616

UNCLASSIFIED

PAGE

14

AD-A066 385

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A066 221 10/2 3/2 8/7
CIVIL ENGINEERING LAB (NAVY) PORT HUENEME CALIF

Digest of Equipment for Converting Solar,
Wind, and Geothermal Energy into Electric
Power for USN Application Ashore.

DESCRIPTIVE NOTE: Final rept. May 77-Mar 78,
REPT. NOV 78 103P Lorman, William R. ;

PROJ. NO. CEL-TN-1534

PROJ: F57571

TASK: ZF57571001

UNCLASSIFIED REPORT

DESCRIPTORS: *Electric power production, *Solar
wind, *Geothermy, *Naval shore facilities, Energy
conversion, Efficiency, Savings, Electric
generators, Natural resources, Heating, Energy
conservation

IDENTIFIERS: *Geothermal energy,

WUZF5757100101008, PE62765N

This document enumerates principal requirements of
self-sufficient electric power conversion equipment
under active consideration by CEL. Data pertain
to financial requirements, physical characteristics,
and potential outputs of solar, wind, and geothermal
energy conversion systems; these systems are part of
USN shore energy research and development program.
Data are intended for use by CEL systems analysts
as input to mathematical model for planning and
optimizing power systems throughout the Naval
Shore Establishment. (Author)

(U)

AD-A066 221

UNCLASSIFIED

PAGE

15

AD-A065 845

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A065 845 11/2 11/3
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

The Possibilities of Selective Glass.

MAR 78 11P Semenov, A. ;
REPT. NO. FTD-ID(RS)T-0327-78

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Izebratatel' i
Ratsionalizator (USSR) n8 p2-3; 10-11 Aug 71, by
Bernard L. Tauber.

DESCRIPTORS: *Glass, *Solar heating, *Coatings,
*Foreign technology, Tin compounds, Oxides,
USSR, Translations

The Possibilities of Selective Glass --
Translation.

(U)

(U)

(U)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD-A065 009 10/2 22/2
SPECTROLAB INC SYLMAR CALIF

High Efficiency Solar Panel (HESP-II). (U)

DESCRIPTIVE NOTE: Final technical rept. Aug 77-Jun 78.
AUG 78 74P Stella, P. M.; Uno, F. M.

Thornhill, Jay W.;
CONTRACT: F33615-77-C-3108
PROJ: 682J
TASK: 04
MONITOR: AFAPL TR-78-60

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar panels, *Solar cells,
*Spacecraft components, Power supplies, Energy
conversion, Efficiency, Silicon, Radiation
Damage, Solar radiation, Synchronous satellites,
Accelerated testing, Gettering, Metals,
Laminates

IDENTIFIERS: PE63401F, WJAFAPL682J0405 (U)
(U)

The objective of this program is to develop space qualified weapon survivable silicon solar cells having a BOL conversion efficiency of 16% at 25 C under AMO illumination. After seven (7) years in the synchronous orbit environment (approximately 3 x 10 exp (14) 1 mev electrons/square centimeter equivalent irradiation) the cells shall not degrade more than 13% in conversion efficiency. The status of the work at this point and the performance of the most recent state-of-the-art cells delivered as representative samples are reported. The results obtained to date indicate that some of the processes chosen for optimization have not proven as fruitful as originally anticipated, while others have demonstrated marked success. The task now is to integrate these various optimizations into an integrated sequence to fabricate cells that meet or surpass the requirements. A list of possible additional investigations, which appear pertinent and useful to this effort, is included in the section entitled Recommendations. (Author) (U)

AD-A065 009

UNCLASSIFIED

PAGE

16

AD-A064 431

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD-A064 431 10/2 20/12 22/2
SOLAREX CORP ROCKVILLE MD

Nonreflecting Vertical Junction Silicon
Solar Cell Optimization. (U)

DESCRIPTIVE NOTE: Final rept. 15 May 76-31 Aug 78.
NOV 78 71P Wohlgenuth, John H.; Wrigley, C. Y.;

CONTRACT: F33615-76-C-2058
PROJ: 3145
MONITOR: AFAPL TR-78-91

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar cells, *Semiconductor diodes,
*Photovoltaic effect, Charge carriers, Photolithography, Radiation hardening, Silicon,
Grooving, Wafers, Mobility, Etching,
Spaceborne

IDENTIFIERS: High efficiency, Vertical junction
solar cells, Spectral response, PE62203F (U)
(U)

This research program has resulted in the development of high conversion efficiency radiation resistant vertical junction silicon solar cells. New techniques of oxidation growth and the use of photolithography enable the use of an orientation dependent etch to produce grooves 5 - 10 microns wide and up to 100 microns deep. These silicon wafers have been processed into solar cells with all processes performed at temperatures compatible with producing high efficiency solar cells. Theoretical calculations of the expected current as a function of radiation dose have been performed. An explanation of the observed open-circuit voltage is provided. Vertical junction solar cells have been fabricated with AMO conversion efficiencies greater than 14%. These cells have shown superior radiation resistance. Vertical junction cells have been fabricated in 2cm x 2cm, 2cm x 4cm and 2cm x 6cm sizes with no size dependence on efficiency or yield. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A062 719 13/1
CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN
ILL

Design of Solar Heating and Cooling
Systems.

(U)

DESCRIPTIVE NOTE: Final rept..

OCT 78 57P Juncich, David M.; Leverenz,
Donald James; Hittle, Douglas C.; Walton,
George N.;

REPT. NO. CERL-TR-E-139

PROJ: 4A762731AT41

TASK: T6

UNCLASSIFIED REPORT

Availability: Document partially illegible.

DESCRIPTORS: *Solar heating, *Cooling, *Solar
energy, *Cost analysis, *Computerized simulation,
Computer aided design, Solar collectors,

Buildings

(U)

IDENTIFIERS: BLAST(Building Loads Analysis and

Systems Thermodynamics) Program, WU021,

AST41, PE62731A

(U)

This report presents a method for making an energy
and an economic cost/benefit analysis of solar energy
systems. A graphical method is presented for
evaluating the performance of solar domestic hot
water systems, solar heating systems, and solar
heating and cooling systems. Methods for selecting
the optimum collector area based on benefit-to-cost
ratio and for systematically making detailed design
calculations using the Building Loads Analysis
and System Thermodynamics (BLAST) computer
simulation program are also presented. Practical
considerations for solar system designs are
discussed. The methods presented provide the
required accuracy for both initial evaluations and
final design calculations. Examples are provided
throughout the text to aid in using the methods
described. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A061 961 22/2 3/2
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

Satellite Solar Station.

(U)

JAN 78 7p

REPT. NO. FTD-ID(RS)T-1452-77

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of "ono. Hang K'ung
Chih Shin, Peking, Nov-Dec 76 p23-24, by Gilbert
S. R. /Hwang.

DESCRIPTORS: *Solar satellites, *Solar energy,
Solar radiation, Sunlight, China,
Translations

(U)

Satellite Solar Station--Translation.

AD-A062 719

UNCLASSIFIED

PAGE

17

AD-A061 961

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A061 956 10/2 13/8
SPIRE CORP BEDFORD MALow Temperature Fabrication of High
Efficiency Silicon Solar Cells.

(U)

DESCRIPTIVE NOTE: Final technical rept. Feb 75-Jun 78.

AUG 78 86P Kirkpatrick, Allen R. ;

Minnucci, John A. ; Greenwald, Anton C. ;

CONTRACT: F33615-75-C-2006

PROJ: 3145

TASK: 19

MONITOR: AFAPL TR-77-86

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar cells, *Silicon, *Annealing,
*Pulses, *Electron beams, *Ion implantation,
Wafers, Energy, Deposition, Processing,
Fabrication, Low temperature, Spacecraft
IDENTIFIERS: PE62203F, WUAFAPL31451951

(U)
(U)

IAC ACCESSION NUMBER: MCIC-104719

IAC DOCUMENT TYPE: MCIC -HARD COPY--

This report describes the results of a program to develop ion implantation/pulsed energy processing for spacecraft solar cell applications. The approach involves employing pulsed electron beam technology to achieve processing parameters not previously possible by conventional furnace heat treatments.

Optimization of the ion implanted solar cell structure was undertaken but not completed. Cells with efficiencies to 13.7% AMO were achieved using furnace annealing and to 12.9% AMO using pulsed electron beam annealing. Prospects for future development to higher efficiencies and for totally automated production are excellent.

Experimental evidence suggests that the ion implanted, pulsed electron beam annealed solar cell may have better inherent tolerance to electron irradiation than similar diffused or furnace annealed implanted junction cells. (Author)

(U)

IAC SUBJECT TERMS: M--(U)Solar Cells, Fabrication,
Ion Implantation, Electron Beam Heating,
Annealing, Pulse Heating, Silicon, Oxide
Coatings, Zirconium Oxide, Titanium Oxide,
Tantalum Oxide, Refractive Index, Electrical
Resistivity, Irradiation.

AD-A061 956

UNCLASSIFIED

PAGE

18

AD-A060 458

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A060 458 13/1

CIVIL AND ENVIRONMENTAL ENGINEERING DEVELOPMENT OFFICE
TYNDALL AFB FL DETACHMENT 1 (ADIC)Third Interim Technical Report on USAFA
Solar Test House Design Parameters.

(U)

DESCRIPTIVE NOTE: Rept. for May 77-Apr 78.

SEP 78 154p Eden, Anthony ; Finsley, John

T. ;

REPT. NO. CEEDO-TR-78-32

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Original contains color plates:

All DDC reproductions will be in black and white.

DESCRIPTORS: *Solar heating, *Heating plants,
Performance (Engineering), Efficiency,
Housing (Dwellings), Prototypes, Energy

Storage, Heat transfer, Heat exchangers

IDENTIFIERS: LPN-CEEDO-PQ-DIC-8-108

(U)

(U)

This report describes the continuing performance of the first retrofit-constructed, solar-heated facility in the USAF, the Solar Test House at the USAF Academy. Continued efforts to improve the performance have been a further reduction of the storage tank volume and installation of make-up water system to work in conjunction with the bleed air valves. The thermography studies started during the previous research period were completed and the techniques of using this advanced procedure for displaying flow patterns validated. The data analysis for the Solar Test House shows the improvement to the efficiency of the total system's ability to supply the thermal energy to the structure. Finally, the various parameters used to design the solar energy systems originally are analyzed and shown to be valid for this application.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A059 131 7/1 7/4
UTAH UNIV SALT LAKE CITY DEPT OF CHEMISTRY'Water Splitting' by Titanium Exchanged
Zeolite A. (U)

DESCRIPTIVE NOTE: Technical rept.,
SEP 78 9p Kuznicki, Steven M.; Eyring,
Edward M.;
REPT. NO. TR-16
CONTRACT: N00014-75-C-0796

UNCLASSIFIED REPORT

DESCRIPTORS: *Ion exchange, *Hydrogen, *Gas
generating systems, Titanium oxides, Gas
chromatography, Electron spin resonance, Photolysis,
Water, Solar energy, Energy conversion, Mass
spectrometry, Free radicals (U)
IDENTIFIERS: Zeolite A, Zeolite Y, (U)
WUNR051556

Visually detectable and chromatographically and
mass spectrally identified hydrogen gas evolves from
titanium (III) exchanged zeolite A immersed in
water and illuminated with visible light.
Titanium(III) exchanged zeolite X and zeolite
Y do not produce this reaction. A photochemically
produced, oxygenated titanium free radical
(detected by electron spin resonance) not
previously described is the species in the zeolite
that reduces protons to molecular hydrogen. The
other product of this reduction step is a nonradical,
oxygenated titanium species of probable empirical
formula TiO₄. Heating the spent oxygenated
titanium containing zeolite A under vacuum at 375
C restores over fifty percent of the free radical.
Unlike previously reported systems, heating does
not restore the original aquotitanium(II) species
in the zeolite. Thus a means other than heating
must be found to achieve a closed photochemical cycle
that harnesses visible solar energy in the production
of molecular hydrogen. The titanium exchanged
zeolite A does, however, lend itself to a
thermolysis of water previously described by Kasai
and Bishop. (Author) (U)

AD-A059 131

UNCLASSIFIED

PAGE

19

AD-A058 626

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A058 626 13/1 3/2 15/5
DUBIN-BLOOM ASSOCIATES NEW YORKSolar Assisted Heat Pump Study for
Heating of Military Facilities. (U)

DESCRIPTIVE NOTE: Final rept. Jul 76-Nov 77.
JUL 78 202p Beason, Freddie L.; Strother,
Larry W.;
CONTRACT: F08635-76-C-0276
MONITOR: AFCEC TR-78-6

UNCLASSIFIED REPORT

DESCRIPTORS: *Heat pumps, *Solar energy, *Military
facilities, Solar heating, Energy conservation,
Life cycle costs, Performance(Engineering),
Hot water, Experimental data, Methodology (U)

This study identified 21 generic solar assisted
heat pump systems and subjectively evaluated them.
The six most promising systems were evaluated in
further detail. A complete objective analysis of
the two most promising systems was then made to
determine which could be most economical to install
in a family housing unit at Little Rock Air
Force Base, Arkansas. The system chosen was a
solar hot water heating system in parallel with a
water source heat pump. Preliminary drawings
integrating this system into a family housing unit
at Little Rock AFB were developed. The system
selected had a 27-32 year pay back. (Author) (U)

UNCLASSIFIED		UNCLASSIFIED	
DOC REPORT BIBLIOGRAPHY	SEARCH CONTROL NO. ZOM09	DDC REPORT BIBLIOGRAPHY	SEARCH CONTROL NO. ZOM09
AD-A058 304 18/3 13/1 14/2 SCIENCE APPLICATIONS INC MCLEAN VA		AD-A058 281 10/2 MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB	
Experimental Studies of Soil Thermal Irradiation. Volume III. Design of Flux Diversion Equipment for Soil Irradiation Testing.	(U)	Simplified Fabrication of GaAs Homojunction Solar Cells with Increased Conversion Efficiencies.	(U)
DESCRIPTIVE NOTE: Final rept. 1 Jan 76-1 Mar 77. APR 77 48P Houghton, A. ; Knasel, T. M.		DESCRIPTIVE NOTE: Journal article. DEC 77 4P Fan, John C. C. ; Bozler, Carl O. ; Chapparan, Ralph L. ; REPT. NO. JA-4802 CONTRACT: F19628-78-C-0002 PROJ: 649L MONITOR: ESD TR-78-94	
REPT. NO. SAI-78-540-WA-VOL-3 CONTRACT: DNA001-75-C-0209 PROJ: Y99QAXS TASK: A002 MONITOR: DNA, SBIE 4484F-3, AD-E300 289		UNCLASSIFIED REPORT	
SUPPLEMENTARY NOTE: See also Volume 1, AD-A058 302.		Availability: Pub. in Applied Physics Letters, v32 n6 p390-392, 15 Mar 78. DESCRIPTORS: *Solar cells, *Gallium arsenides, Semiconductor junctions, Energy conversion, Efficiency, Reprints	(U)
DESCRIPTORS: *Nuclear explosion simulation, *Solar furnaces, *Thermal radiation, Soils, Test equipment, Experimental design, Heat flux, Reflection, Directional, Flux density, Blowoff, Soils, Irradiation, Instrumentation, Blast waves, Precursors	(U)	Reprint: Simplified Fabrication of GaAs Homojunction Solar Cells with Increased Conversion Efficiencies.	(U)
IDENTIFIERS: Thermal layers, Design, PE62704H, WU05	(U)		
The total report describes three experimental activities in thermal layer experimental development. Volume I/1 contains descriptions of design and experimental work directed toward the use of a flux redirection for a large solar furnace. Successful completion of this design allows testing of soils at above 300 cal/sq cm sec. An investigation was made of the feasibility of extending the solar furnace source soil blow-off tests (reported in Volume 1) to higher flux levels. Previous work had identified the C10S solar furnace at Odjillo- Font Romeu, France, as the unique radiant energy source. Accomplishment of the tests would require: Design of an optical configuration to direct the solar furnace flux onto horizontal soil samples (necessitating a 90 deg redirection); Construction of the critical optical and mechanical components and testing in the actual solar furnace environment;	(U)		
AD-A058 304	UNCLASSIFIED	AD-A058 281	UNCLASSIFIED
	PAGE 20		ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A057 252 10/2 10/3
BURNS AND ROE INC WOODBURY NY

USAF Terrestrial Energy Study. Volume III. Part 2. Energy Conversion Systems Handbook.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Apr 76-1 Feb 78.

MAY 78 483P Carlson, A.; Fuller, D.;

Rever, R.; Maliner, C.; Fogelson, S.;

CONTRACT: F33615-76-C-2171

PROJ: 3145

TASK: 23

MONITOR: AFAPL TR-78-19-VOL-3-PI-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A055 213.

DESCRIPTORS: *Energy. *Energy conversion. *Electric power production, Planning. Economics, Performance (Engineering). Costs. Life cycle costs. Efficiency. Environmental impact statements. Energy management. Energy storage. Fuels. Chemicals. Radioactive isotopes. Reactor fuels. Solar energy. Wind

(U)

IDENTIFIERS: PE62203F, WUAFAPL31452312

(U)

This report was prepared by Burns and Roe, Inc. to serve as a guide for the U.S. Air Force in selection of energy conversion systems to meet future ground power requirements. Included in this report are power requirements included in this report range from 10 kilowatts to 50 megawatts. Twenty-one types of systems, conventional as well as advanced, are considered. These include 19 types of energy conversion systems which utilize either chemical fuel, nuclear fuel, solar energy or wind energy and two types of energy storage systems which utilize electric power for recharging. Each system is characterized in terms of a set of economic, physical and performance parameters including acquisition costs, life cycle costs, size, efficiency and environmental constraints. A total of eighteen such parameters are presented for each type of system for several sets of requirements. The requirements are defined in terms of electric power level.

(U)

AD-A057 252

UNCLASSIFIED

PAGE

21

AD-A056 603

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A056 603 13/1 8/10 13/10
TRACOR MARINE PORT EVERGLADES FL OCEAN TECHNOLOGY DIV

A Preliminary Design, Economic and Energy Analysis, and Environmental Impact Assessment for a Seawater Cooling Project Naval Security Group Facilities at Winter Harbor, Maine.

(U)

DESCRIPTIVE NOTE: Final rept.,

MAR 77 179P Hirshman, Jules;

REPT. NO. TRACOR-726171

CONTRACT: N62305-77-C-0012

PROJ: Z0412

TASK: Z041201

MONITOR: CEL CR-78.009

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A056 604.

DESCRIPTORS: *Air conditioning equipment. *Sea water. *Naval shore facilities. Energy conservation. Life cycle costs. Solar energy. Temperature control. Heat exchangers. Economic analysis. Coils. Fouling organisms. Pipelines. Maine. Environmental impact statements

(U)

IDENTIFIERS: Winter Harbor (Maine),

PE64710N, WUZ041201001

(U)

Preliminary design and analysis were performed for a proposed seawater air conditioning system for an existing U.S. Navy building at Corea, Maine. Two major options were examined. The first, to use seawater for the entire cooling load (100 tons); the second, to use additional cooling and dehumidification (enhancement) if necessary, when the seawater temperature is too high. A number of alternate enhancement methods were examined, and preliminary designs developed, including one for a solar/desiccant drying system. The existing air conditioning system was also considered for use for enhancement, if desired. The initial costs would be lower than for a new enhancement system; however, life cycle costs for this option would be higher due to greater energy use. The life cycle costs for the seawater system are lower than for a conventional system. If the seawater system can be used without enhancement, it can save 87% of the electrical energy used for air conditioning. With enhancement it can save 68% of the electrical energy.

(U)

1
2
3
4
5
6
7
8
9
10
11
12

[illegible][illegible]

S.S.E. 7' (6) 111

1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
 25
 26
 27
 28
 29
 30
 31
 32
 33
 34
 35
 36
 37
 38
 39
 40
 41
 42
 43
 44
 45
 46
 47
 48
 49
 50
 51
 52
 53
 54
 55
 56
 57
 58
 59
 60
 61
 62
 63
 64
 65
 66
 67
 68
 69
 70
 71
 72
 73
 74
 75
 76
 77
 78
 79
 80
 81
 82
 83
 84
 85
 86
 87
 88
 89
 90
 91
 92
 93
 94
 95
 96
 97
 98
 99
 100
 101
 102
 103
 104
 105
 106
 107
 108
 109
 110
 111
 112
 113
 114
 115
 116
 117
 118
 119
 120
 121
 122
 123
 124
 125
 126
 127
 128
 129
 130
 131
 132
 133
 134
 135
 136
 137
 138
 139
 140
 141
 142
 143
 144
 145
 146
 147
 148
 149
 150
 151
 152
 153
 154
 155
 156
 157
 158
 159
 160
 161
 162
 163
 164
 165
 166
 167
 168
 169
 170
 171
 172
 173
 174
 175
 176
 177
 178
 179
 180
 181
 182
 183
 184
 185
 186
 187
 188
 189
 190
 191
 192
 193
 194
 195
 196
 197
 198
 199
 200
 201
 202
 203
 204
 205
 206
 207
 208
 209
 210
 211
 212
 213
 214
 215
 216
 217
 218
 219
 220
 221
 222
 223
 224
 225
 226
 227
 228
 229
 230
 231
 232
 233
 234
 235
 236
 237
 238
 239
 240
 241
 242
 243
 244
 245
 246
 247
 248
 249
 250
 251
 252
 253
 254
 255
 256
 257
 258
 259
 260
 261
 262
 263
 264
 265
 266
 267
 268
 269
 270
 271
 272
 273
 274
 275
 276
 277
 278
 279
 280
 281
 282
 283
 284
 285
 286
 287
 288
 289
 290
 291
 292
 293
 294
 295
 296
 297
 298
 299
 300
 301
 302
 303
 304
 305
 306
 307
 308
 309
 310
 311
 312
 313
 314
 315
 316
 317
 318
 319
 320
 321
 322
 323
 324
 325
 326
 327
 328
 329
 330
 331
 332
 333
 334
 335
 336
 337
 338
 339
 340
 341
 342
 343
 344
 345
 346
 347
 348
 349
 350
 351
 352
 353
 354
 355
 356
 357
 358
 359
 360
 361
 362
 363
 364
 365
 366
 367
 368
 369
 370
 371
 372
 373
 374
 375
 376
 377
 378
 379
 380
 381
 382
 383
 384
 385
 386
 387
 388
 389
 390
 391
 392
 393
 394
 395
 396
 397
 398
 399
 400
 401
 402
 403
 404
 405
 406
 407
 408
 409
 410
 411
 412
 413
 414
 415
 416
 417
 418
 419
 420
 421
 422
 423
 424
 425
 426
 427
 428
 429
 430
 431
 432
 433
 434
 435
 436
 437
 438
 439
 440
 441
 442
 443
 444
 445
 446
 447
 448
 449
 450
 451
 452
 453
 454
 455
 456
 457
 458
 459
 460
 461
 462
 463
 464
 465
 466
 467
 468
 469
 470
 471
 472
 473
 474
 475
 476
 477
 478
 479
 480
 481
 482
 483
 484
 485
 486
 487
 488
 489
 490
 491
 492
 493
 494
 495
 496
 497
 498
 499
 500
 501
 502
 503
 504
 505
 506
 507
 508
 509
 510
 511
 512
 513
 514
 515
 516
 517
 518
 519
 520
 521
 522
 523
 524
 525

reas.../s...s. re...s...s
Hos...e...s...s

[illegible]

1907

1908

1909

1910

1911

1912

1913

1914

1915

1916

1917

1918

1919

1920

1921

1922

1923

1924

1925

1926

1927

1928

1929

1930

1931

1932

1933

1934

1935

1936

1937

1938

1939

1940

1941

1942

1943

1944

1945

1946

1947

1948

1949

1950

1951

1952

1953

1954

1955

1956

1957

1958

1959

1960

1961

1962

1963

1964

1965

1966

1967

1968

1969

1970

1971

1972

1973

1974

1975

1976

1977

1978

1979

1980

1981

1982

1983

1984

1985

1986

1987

1988

1989

1990

1991

1992

1993

1994

1995

1996

1997

1998

1999

2000

2001

2002

2003

2004

2005

2006

2007

2008

2009

2010

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

2021

2022

2023

2024

2025

2026

2027

2028

2029

2030

2031

2032

2033

2034

2035

2036

2037

2038

2039

2040

2041

2042

2043

2044

2045

2046

2047

2048

2049

2050

2051

2052

2053

2054

2055

2056

2057

2058

2059

2060

2061

2062

2063

2064

2065

2066

2067

2068

2069

2070

2071

2072

2073

2074

2075

2076

2077

2078

2079

2080

2081

2082

2083

2084

2085

2086

2087

2088

2089

2090

2091

2092

2093

2094

2095

2096

2097

2098

2099

2100

2101

2102

2103

2104

2105

2106

2107

2108

2109

2110

2111

2112

2113

2114

2115

2116

2117

2118

2119

2120

2121

2122

2123

2124

2125

2126

2127

2128

2129

2130

2131

2132

2133

2134

2135

2136

2137

2138

2139

2140

2141

2142

2143

2144

2145

2146

2147

2148

2149

2150

2151

2152

2153

2154

2155

2156

2157

2158

2159

2160

2161

2162

2163

2164

2165

2166

2167

2168

2169

2170

2171

2172

2173

2174

2175

2176

2177

2178

2179

2180

2181

2182

2183

2184

2185

2186

2187

2188

2189

2190

2191

2192

2193

2194

2195

2196

2197

2198

2199

2200

2201

2202

2203

2204

2205

2206

2207

2208

2209

2210

2211

2212

2213

2214

2215

2216

2217

2218

2219

2220

2221

2222

2223

2224

2225

2226

2227

2228

2229

2230

2231

2232

2233

2234

2235

2236

2237

2238

2239

2240

2241

2242

2243

2244

2245

2246

2247

2248

2249

2250

2251

2252

2253

2254

2255

2256

2257

2258

2259

2260

2261

2262

2263

2264

2265

2266

2267

2268

2269

2270

2271

2272

2273

2274

2275

2276

2277

2278

2279

2280

2281

2282

2283

2284

2285

2286

2287

2288

2289

2290

2291

2292

2293

2294

2295

2296

2297

2298

2299

2300

2301

2302

2303

2304

2305

2306

2307

2308

2309

2310

2311

2312

2313

2314

2315

2316

2317

2318

2319

2320

2321

2322

2323

2324

2325

2326

2327

2328

2329

2330

2331

2332

2333

2334

2335

2336

2337

2338

2339

2340

2341

2342

2343

2344

2345

2346

2347

2348

2349

2350

2351

2352

2353

2354

2355

2356

2357

2358

2359

2360

2361

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A054 912 3 2
IOWA UNIV IOWA CITY DEPT OF PHYSICS AND ASTRONOMY

High Resolution Spectrograms of Ion-Acoustic waves in the Solar Wind.

(U)

DESCRIPTIVE NOTE: PROGRESS REPT.,
MAR 78 29p Kunth, W. S.; Gurnett, D.
A.; Scarf, F. L.;
REPT. NO. U. of Iowa-78-15
CONTRACT: N00014-76-C-0016, N459-54013

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar wind. *Ion density. *Acoustic waves. Bow shock. Spectrum analysis. Space probes. Signal processing. Data reduction
IDENTIFIERS: Voyager, Helios satellites

Ion-acoustic waves, similar to those detected by the Helios spacecraft from 0.3 to 1.0 AU, have now been detected by the Voyager spacecraft in the solar wind out to heliocentric radial distances of 1.7 AU. High bit rate waveform measurements provide the first high resolution, frequency-time spectrograms of these waves. The Voyager spectrograms show that the ion-acoustic waves consist of narrow-band bursts which last for a few seconds or less. The center frequency of the bursts can fluctuate rapidly in frequency, usually in the range between the electron and ion plasma frequency $f_{sub p(-)}$ and $f_{sub p(+)}$. (These waves have been previously referred to as $f_{sub p(+)} < f < f_{sub p(-)}$ noise.)

(U)

AD-A054 912

UNCLASSIFIED

PAGE

23

AD-A054 601

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A054 601 3/2 13/1
CIVIL ENGINEERING LAB (NAVY) PORT HUENEME CALIF

Solar Heating of Buildings and Domestic Hot Water.

(U)

DESCRIPTIVE NOTE: Final rept. Jul 74-Dec 75,
NOV 77 88p Beck, E. J., Jr.; Field, R. L.;
REPT. NO. CEL-TR-835
PROJ: F57571
TASK: YF57571999

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Supersedes report dated Jan 76.
AD-A021 852.
DESCRIPTORS: *Solar heating.
*Heating/Dwelling. *Hot water. Solar energy.
Solar collectors. Water tanks. Heat transfer.
Design to cost. Architecture.
Sizes (Dimensions). Fuel consumption. Savings.
Investments. Bibliographies
IDENTIFIERS: PB027651, A01006

(U)
(U)

The purpose of this document is to provide guidance in the design and cost analysis of solar heating systems for buildings and domestic hot water (DHW). The nature of solar radiation, several types of solar systems, storage devices and architectural considerations are among topics included. Calculation methods are included for determining collector size, storage size, simplified building and DHW loads, value of fuel saved, and saving-investment ratios. The calculation procedure is based on parametric curves for fraction of heating load supplied by solar energy and several rules of thumb for design. A series of 11 worksheets is used to enable the engineer with no prior experience with solar systems to accomplish a complete design and cost analysis. With this information he can prepare bidding and specification documents for the job. Tables of solar insolation at various Navy stations, typical building heat loads, collector prices by type, and storage tank prices are included. Two example problems are worked for tube-in-sheet collectors: one for space and DHW heating for a single dwelling, and the other DHW supply for a dispensary.

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A053 960 10/2 14/2 9/6
 ARMY MOBILITY EQUIPMENT RESEARCH AND DEVELOPMENT COMMAND
 FORT BELVOIR VA

Solar Cell Power for Field Instrumentation
 at White Sands Missile Range.

(U)

DESCRIPTIVE NOTE: Final rept..

JAN 78 49p Bond, John W., Jr.;
 Reckart, Darwin H., Jr.; Milway, William B.;
 REPT. NO. MERADCOM-2229
 PROJ: 1U765702D623

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar cells, *Instrumentation,
 *Guided missile ranges, *Telemeter systems, Remote
 systems, Photovoltaic effect, Telescopes, Storage
 batteries, Radar equipment, Range finding, Drones,
 Formation flight, Interrogators, Airborne
 IDENTIFIERS: Cinethedolites, AS623,
 PE65702A

(U)

(U)

The initial phase of an Instrumentation
 Development Project to explore and document what
 solar power can do for remote field instrumentation
 systems is described. The work scope consisted of
 selection, design, construction, test, and delivery
 of a solar cell power system for White Sands
 Missile Range. A Drone Formation Control
 System Interrogator was selected; a power supply
 was built and installed in the San Andres
 Mountain Range at WSMR in late August 1977.
 (Author)

(U)

AD-A053 960

UNCLASSIFIED

PAGE

24

AD-A053 428

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A053 428 5/1 10/2 13/10
 TETRA TECH INC ARLINGTON VA

U.S. Navy Energy R and D Progress,
 1977.

(U)

DESCRIPTIVE NOTE: Technical rept.

MAR 78 156p
 REPT. NO. TETRAT-A-938-78-361
 CONTRACT: N00014-77-C-0350

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy management, *Energy,
 conservation, Cost effectiveness, Naval planning,
 Synthetic fuels, Energy consumption, Legislation,
 Geothermy, Solar heating, Cost overruns, Nival
 vessels

(U)

(U)

IDENTIFIERS: Self sufficiency

This U.S. Navy Energy R and D

Progress report summarizes the progress of the
 Navy Energy, R and D program from October
 through December 1977 and progress prior to
 October 1977 which had not previously been
 documented. Potential energy savings for each
 project is included. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A051 851 10/2 18/8
 HUGHES AIRCRAFT CO EL SEGUNDO CALIF SPACE AND
 COMMUNICATIONS GROUP

GaAs Concentrator Photovoltaic Power
 System Feasibility Investigation.

DESCRIPTIVE NOTE: Final rept. 15 Jun 76-30 Sep 77,
 DEC 77 99P
 :Schwartz, S.; Wolff, G.;
 REPT. NO. SCG-70392P
 CONTRACT: F3615-76-C-2142
 PROJ: 682J
 TASK: 04
 MONITOR: AFAPL TR-77-80

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar cells, *Solar energy, Gallium
 arsenides, Radiation damage, Solar collectors,
 Temperature coefficients, Welded joints, Circuit
 interconnections
 IDENTIFIERS: Space power systems, PE63401F,
 WUAFAPL682J0403

IAC ACCESSION NUMBER: MCIC-102720

IAC DOCUMENT TYPE: WCIC -HARD COPY--

A number of GaAs Solar Cells for high
 sunlight intensity operation were fabricated and
 experimentally evaluated. I-V characteristics
 were determined for 1, 5, and 9 solar constants.
 Temperature coefficients of OC, SCC, and
 Pmax were determined for one Sun GaAs cells by
 measuring cell electrical performance at 50 C steps
 from -190 C to +250 C. Results of 1 Mev
 electron irradiation to 1 x 10 to the 16th power,
 Mev equivalent electrons/sq.cm, and welded
 interconnect investigations are presented.
 (Author)

IAC SUBJECT TERMS: M--(U)Solar Cells, Gallium
 Arsenide, Radiation Studies, Welding, Design,
 Absorption Coefficient, Temperature Coefficient,
 Measurement, Fabrication, Thermal Analysis.

AD-A051 851

UNCLASSIFIED

PAGE

25

AD-A051 335

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A051 335 7/3 20/8 7/5
 BOSTON UNIV MASS DEPT OF CHEMISTRY

Photoisomerization of Bis(9-Anthryl)Methane
 and other Linked Anthracenes. The Role of
 Excimers and Biradicals in Photodimerization.

DESCRIPTIVE NOTE: Technical rept. no. 7, 1 Nov 76-31
 Dec 77,
 MAR 78 43P Bergmark, William R.; Jones,
 Guilford, II; Reinhardt, Thomas E.; Halpern,
 Arthur W.;
 CONTRACT: N00014-76-C-0442

UNCLASSIFIED REPORT

DESCRIPTORS: *Methane, *Anthracenes,
 *Isomerization, *Photochemical reactions, Solar
 energy, Energy conversion, Energy storage, Valence
 bands, Photochromism, Pyrolysis, Reaction
 kinetics, Heat of reaction, Protons, Fluorescence,
 Quantum chemistry, Life expectancy, Chemical
 radicals
 IDENTIFIERS: WUNR051574

A series of linked anthracenes capable of storing
 photon energy through endogenic valence photo-
 isomerization have been studied. Photochemical and
 photochemical characteristics of the systems have
 been completely characterized by measurement of
 fluorescence quantum yields and lifetimes, and
 efficiencies for forward and reverse isomerization.
 The release of energy stored in photoisomers has
 been measured using kinetic and calorimetric
 techniques. From emission and lifetime data the
 respective roles of excimers and biradicals in
 anthracene photodimerization have been defined.
 (Author)

AD-A051 851

UNCLASSIFIED

PAGE

25

AD-A051 335

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A051 101 13/1 10/2
LITTLE (ARTHUR D) INC CAMBRIDGE MASSPreliminary Design of a 10 kWe Solar Heated
Open Brayton-Cycle Engine. Phase I.

DESCRIPTIVE NOTE: Final rept.

NOV 77 76P

REPT. NO. ADL-C-79516-F

CONTRACT: N68305-76-C-0014

PROJ: F57571

TASK: YF57571999

MONITOR: CEL CR-78.003

UNCLASSIFIED REPORT

DESCRIPTORS: *Brayton cycle, *Solar energy, Solar collectors, Solar generators, Electric power production, Heat exchangers, Parabolic bodies, Reflectors, Solar heating

IDENTIFIERS: *Brayton cycle engines, Parabolic dish reflectors, PE62765N, WUXF575719901009C

This report discusses the results of the first phase of a two-phase program to assess the applicability of electric power generation from solar energy at Naval bases, particularly advanced bases which require small, mobile systems not under development in the civilian sector. For purposes of establishing a baseline system against which the costs and benefits of various solar-to-electric energy conversion processes can be compared, an open-cycle air turbine/generator set was chosen with tracking parabolic dish reflector to focus direct solar radiation onto a collector/heat exchanger providing heat for the engine.

(U)

AD-A051 101

UNCLASSIFIED

PAGE

26

AD-A050 640

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A050 640 4/1
AEROSPACE CORP EL SEGUNDO CALIF IVAN A GETTING LABSSatellite Observations of Polar, Magnetotail
Lobe, and Interplanetary Electrons at Low
Energies.

DESCRIPTIVE NOTE: Interim rept.,

JAN 78 33P

Joseph F.; Mizera, Paul F.; Fennell,

REPT. NO. TR-0078(3690-05)-4

CONTRACT: F04701-77-C-0078

MONITOR: SAMSO TR-78-6

UNCLASSIFIED REPORT

DESCRIPTORS: *Electron flux, *Polar regions, Low energy, Magnetosphere, Interactions, Solar wind, Spectrum analysis, Electron density, Altitude, Distribution, Trapping(Charged particles)

(U)

Low altitude satellite observations of the low energy electron fluxes that populate the polar regions are summarized and classified into two groups: 1, the very low intensity distributions and 2, the more intense, often structured distributions observed during magnetically disturbed conditions. High altitude observations of electron fluxes, including the solar wind and the tail lobes, are presented to suggest that class 1 observations are the result of direct access of interplanetary electrons through the lobes into the polar regions. Class 2 observations may be due in part to magnetospheric processes. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A050 026 3/2 10/1
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIFSolar Energy for the Naval Shore
Establishment.DESCRIPTIVE NOTE: Master's thesis.
DEC 77 246P Geibel, Bruce Burgee ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar energy, *Naval shore facilities,
*Energy conversion, Feasibility studies, Energy
conservation, Modification, Retrofitting,
Computerized simulation, Solar cells, Photovoltaic
effect, Fossil fuels, Military requirements,
Energy management, Theses

(U)

This thesis discusses the background and extent of
the current national energy crisis, and reviews the
alternative energy sources available to the United
States Navy other than conventional fossil fuels.
An in-depth analysis is made of the advantages,
disadvantages and techniques of one of these
alternatives, solar energy conversion. The
National Solar Energy Program is reviewed, as
is the role of the Department of Defense and the
United States Navy in this program. Methods
of 'retrofitting' existing Navy facilities with
solar energy systems are discussed, as are new
construction techniques. The thesis further
contains techniques for life-cycle costing of
alternative solar energy systems, which includes
computer model programs such as BASIC Language,
F-Chart calculations, and SOLCOST calculations.
The thesis concludes with suggestions for
establishing a viable solar energy program on an
activity or individual basis. A comprehensive
reference list and bibliography is provided to
identify where technical and engineering details can
be found. (Author)

(U)

AD-A050 026

UNCLASSIFIED

PAGE

27

AD-A049 982

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A049 982 10/2
PENNSYLVANIA STATE UNIV UNIVERSITY PARK APPLIED RESEARCH
LABHigh-Temperature Linear Radiation-Cavity
Solar Collector with a Fresnel
Concentrator.

(U)

DESCRIPTIVE NOTE: Doctoral thesis,
DEC 77 235P Antoniak, Zenen I. ;
REPT. NO. TM-77-326
CONTRACT: N00017-73-C-1418

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar collectors, Scale models, Test
and evaluation, Solar energy, Energy transfer,
Heating, Efficiency, Heat transfer, Cavities,
Fresnel lenses, Focusing, Control systems,
Mirrors, Steering, Computer applications
IDENTIFIERS: Design

(U)

(U)

A model solar-thermal concentrator-collector that
is 1/8th scale (in cross section) relative to a
system considered to be of practical dimensions for
power generation has been constructed and tested.
It consists of an Archimedes (i.e.,
Fresnel) mirror-concentrator, 5 cm ID x 1.5 m
long glass receiver pipe, 0.3 cm thick graphite
absorber, and gaseous (Ar) heat transfer medium.
On clear days (direct solar flux ca. 800 W/
sq.m.), stagnation (i.e., no-flow condition)
temperatures of ca. 370 C have been reached at the
center of the experimental device, where end effects
are minimal. Experiments have been performed with
gas flow rates up to ca. 100 liters/min (200 RE
2000), resulting in a bulk fluid temperature rise
in the axial (flow) direction of up to 295 C.

These experiments have been utilized in a study of
heat transfer processes within the collector. A
computer model of this system which takes into
account most of the influential variables (e.g.,
combined forced-free convection, establishment of
velocity and temperature profiles, and axial heat
conduction) has been developed. Its behavior
agrees well with observations. Also, after ca. 200
h of high-temperature operation, materials
degradation was measured and found to be very low.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A049 490 13/1 10/1 10/2 13/2
CIVIL AND ENVIRONMENTAL ENGINEERING DEVELOPMENT OFFICE
TYNDALL AFB FL DETACHMENT 1 (ADTC)

A Survey of Considerations for Solar Energy
Facility Applications. (U)

DESCRIPTIVE NOTE: Final rept.,
DEC 77 65P Nay, Marshall W. , Jr;
REPT. NO. CEEDO-TR-77-39

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar heating, Air Force facilities,
Energy management, Solar energy, Solar collectors,
Technology forecasting, Space heaters,
Retrofitting, Cost estimates, Amortization, Air,
Force planning, Fossil fuels, Resource management,
Energy consumption, Energy conversion,
Photovoltaic effect, Heat pumps, Air conditioning
equipment, Military requirements, Remote areas
IDENTIFIERS: Environmental impact (U)
(U)

The purpose of this report is to provide Air
Force civil engineers some useful information for
the planning and programming of solar energy systems
to satisfy facility energy requirements. This
report has been prepared in response to the belief
that considerable interest in solar energy system
technology, as well as other alternate energy
schemes, is increasing at a rapid pace in the Air
Force. A considerable effort is devoted to
appraising the current status of fossil fuel energy
resources in order to establish the need for expanded
work in developing solar energy technology. The
current and potential areas of application of solar
energy technology are described with special
attention devoted to space heating. Additionally,
environmental considerations of solar energy
technology are described along with the current Air
Force solar energy program. This report concludes
with some suggestions for establishing a solar energy
program on an individual or installation basis.
(Author) (U)

AD-A049 490

UNCLASSIFIED

PAGE

28

AD-A049 903

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A048 908 10/1 10/2
AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERING

Solar Electric Generating System Resource
Requirements and the Feasibility of Orbiting
Solar Reflectors. (U)

DESCRIPTIVE NOTE: Master's thesis,
DEC 77 187P Enger, Rolf C. ;
REPT. NO. AFIT/GE/PH/77D-3

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar collectors, *Solar energy,
*Space to surface, *Electric power production,
Solar orbits, Mirrors, Photovoltaic effect,
Terrestrial radiation, Materials, Costs, Thermal
power plants, Spaceborne, Orbits, Theses
IDENTIFIERS: Solar optics, OSR(Orbiting Solar
Reflectors), *Solar reflectors (U)
(U)

The potential consumption of natural resources by
four solar electric generating systems was evaluated.
They included a terrestrial solar thermal, a
terrestrial photovoltaic, an orbiting solar
reflector, and a satellite solar power system. Each
was evaluated on its projected consumption of
materials, land, water, manpower, energy, and money.
The evaluation demonstrated that, per megawatt of
electrical generating capacity, the terrestrial
systems would consume less resources mainly because
they would not require massive space transportation
and construction systems and expensive developmental
programs. It was also shown that construction of
terrestrial systems would require fewer technological
advancements and would pose less of a threat to the
environment. A feasibility study of orbiting solar
reflectors demonstrated that single-mirror systems
may be useful for intra-space power generation. The
report contains a 47-item bibliography.
(Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A048 312 11/2 10/2 11/3
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG
MISS

Identification of Alternative Power Sources
for Dredged Material Processing
Operations.

(U)

DESCRIPTIVE NOTE: Final rept.,
NOV 77 136P Parker, C. E. ; Pat. D. ;
Vodnaska, K. F. ; Ciani, J. B. ;
REPT. NO. WES-TR-D-77-32

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Includes Appendices A-E.

DESCRIPTORS: *Dredged materials, *Processing,
*Power supplies, *Wind, Solar energy, Hydraulic
power, Energy conversion, Electric power production,
Dredging, Water, Silt, Sand, Gravel, Clay,
Removal

IDENTIFIERS: Wind power

(U)
(U)

This report provides a basis for selecting
alternative, renewable power sources specifically for
operating dredged material processing systems. A
dredged material processing system is designed to:
(1) extract sand and gravel for commercial use,
(2) remove silt and clay from water to meet
quality restrictions on return water, and (3)
dewater the residual silt and clay to reduce volume
and provide a usable foundation for later land use.
Currently, processing of dredged material usually
consists of holding the hydraulically pumped slurry
in a diked containment area and pumping or draining
off the water after settlement of the suspended
material. Subsequent natural drying by sun and wind
presents a problem if the material is a fine-grained
silt or clay. The scope of the assigned task was to
provide a screening and selection procedure for the
engineer designing a dredged material processing
system in order to decide which natural form of
energy (or combination), if any, should be chosen
to power the system. Alternative power can be
provided in several forms. The following were
considered in this study: (1) Wind power,
driving pumps and electric generators, (2)
Solar radiation converted to thermal and electrical
energy.

(U)

AD-A048 312

UNCLASSIFIED

PAGE

29

AD-A047 925

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A047 925 9/2 10/2
JET PROPULSION LAB PASADENA CALIF

Computer program for Design and Performance
Analysis of Navigation-Aid Power Systems.
Program Documentation, Volume I. Software
Requirements Document.

(U)

DESCRIPTIVE NOTE: Final rept.,
JUL 77 182P Goltz, G. ; Kaiser, L. M. ;
Weiner, H. ;
REPT. NO. JPL-5040-27-Vol-1
MONITOR: USCG, CGR/DC D-11-77-VOL-1, 18/76-VOL-
1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2. AD-A047
356.

DESCRIPTORS: *Computer program documentation, *Power
supplies, *Solar cells, *Electric batteries,
*Computer aided design, Feasibility studies, Life
expectancy, Cost effectiveness, Flow charting,
Algorithms, Test and evaluation

(U)

A computer program has been developed for designing
and analyzing the performance of solar array/battery
power systems for the U.S. Coast Guard
Navigation Aids. This program is called the
Design Synthesis/Performance Analysis
(DSPA) Computer Program. The basic function
of the Design Synthesis portion of the DSPA
program is to evaluate functional and economic
criteria to provide specifications for viable solar
array/battery power systems. The basic function of
the Performance Analysis portion of the DSPA
program is to simulate the operation of solar array/
battery power systems under specific loads and
environmental conditions. This document establishes
the software requirements for the DSPA computer
program, discusses the processing that occurs within
the program, and defines the necessary interfaces for
operation.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A047 842 3/2
STANFORD UNIV CALIF INST FOR PLASMA RESEARCHAn Observational Search for Large-Scale
Organization of Five-Minute Oscillations on
the Sun.

(U)

DESCRIPTIVE NOTE: Technical rept.,

JUL 77 22P Dittner, Phil H.; Scherrer,
Philip H.; Wilcox, John M.;

REPT. NO. SU-IPR-809

CONTRACT: N00014-76-C-0207, NGR-05-020-559

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Also prepared under contract nos.
NSF-ATM-74-19007 and NSF-DES-75-15664 and supported
by Max C. Fleischmann Foundation.DESCRIPTORS: *Solar corona, *Solar activity, Solar
energy, Solar observatories, Temperature,
Variations, Sunspots, Power spectra, Magnetic
fields, Velocity, Solar wind, Acoustic waves,
Solar disturbances

(U)

IDENTIFIERS: Coronal holes, Solar velocity
fields

(U)

The large-scale solar velocity field has been measured over an aperture of radius 0.8 R on 121 days between April and Sept., 1976. Measurements are made in the line FeI 5123.730A, employing a velocity subtraction technique similar to that of Severny et al. (1976). Comparisons of the amplitude and frequency of the five-minute resonant oscillations with the geomagnetic C9 index and magnetic sector boundaries show no evidence of any relationship between the oscillations and coronal holes or sector structure. The average period measured for the five-minute oscillation is 312.0 plus or minus 0.9 sec, which is longer than the average 296.1 plus or minus 1.3 sec period originally reported by Noyes and Leighton (1963) from measurements in the line CaI 6103. The average amplitude is 2.0 m/s, which agrees reasonably with the 2.4 m/s value reported by Fossat and Rontz (1975). This amplitude is larger than might have been expected from an extrapolation of the work of Tanenbaum et al. (1969) to a large aperture, and is evidence of a large horizontal wavelength for the oscillations.

(U)

AD-A047 842

UNCLASSIFIED

PAGE

30

AD-A047 542

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A047 542 9/2 10/3 4/2
JET PROPULSION LAB PASADENA CALIFComputer Program for Design and Performance
Analysis of Navigation-Aid Power Systems
Program Documentation, Volume III -
Programmer's Manual.

(U)

DESCRIPTIVE NOTE: Final rept.,

JUL 77 166p Goltz, G.; Weiner, H.;

REPT. NO. JPL-5040-27-VOL-3-Change 1

MONITOR: USCG, CGR/DC D-11-77-VOL-3, 18/76-VOL-

3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A047
356.DESCRIPTORS: *Programming manuals, *Mathematical
analysis, *Solar cells, *Power supplies,
Navigation aids, Electronic batteries, Cost
effectiveness, Feasibility studies,
Performance engineering, Input output
processing, Computer programs, Solar radiation,
Geographical distribution, Variations,
Meteorological data, Cloud cover

(U)

A computer program has been developed for designing and analyzing the performance of solar array/battery power systems for the U.S. Coast Guard Navigation Aids. This program is called the Design Synthesis/Performance Analysis (DSPA) Computer program. The basic function of the Design Synthesis portion of the DSPA program is to evaluate functional and economic criteria to provide specifications for viable solar array/battery power systems. The basic function of the Performance Analysis portion of the DSPA program is to simulate the operation of solar array/battery power systems under specific loads and environmental conditions. This document provides a detailed description of the DSPA Computer Program system and its subprograms. This manual will assist the programmer in revising or updating the several subprograms.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A046 763 17/2 22/2 20/5
SPACE AND MISSILE SYSTEMS ORGANIZATION LOS ANGELES
CALIF

Solar-Powered Laser Communications System
for Space.

(U)

DESCRIPTIVE NOTE: Rept. for 1 Jul-31 Aug 77
77 10P Barry, James D. ;

REPT. NO. SANSO-TR-77-179

PROJ: 2028

TASK: 03

UNCLASSIFIED REPORT

Availability: Pub. in Astronautics and
Aeronautics, V15 n9 p39-45 1977.

DESCRIPTORS: *Laser communications, *Space
communications, Neodymium lasers, Solar energy,
Optical pumping, Long life, Data rate, High
rate, Reprints

(U)

IDENTIFIERS: Satellite communications, Nd-YAG
lasers, PE63431F

(U)

Space communications with the Nd:YAG laser
offers extended operating life due to the use of
direct solar pumping of the laser. Solar radiation
is converted directly to laser light. A laser
communications system now in final development will
allow the transfer of 10 to the 9th power data bits
per second. The laser system is to be tested in the
early 1980s. (Author)

(U)

AD-A046 763

UNCLASSIFIED

PAGE

32

AD-A046 150

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A046 150 10/2 9/5 9/1
SCLAREX CORP ROCKVILLE MD

Nonreflecting Vertical Junction Silicon
Solar Cell Optimization.

(U)

DESCRIPTIVE NOTE: Interim rept. May 76-May 77,
JUL 77 82p Monigemuth, John ; Lindmayer,

J. ; Scheinine, A. ;

CONTRACT: F33615-76-C-2058

PROJ: 3145

TASK: 19

MONITOR: AFAPL TR-77-38

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar cells, *Semiconductor diodes,
Silicon, Photovoltaic effect, Efficiency,
Radiation resistance, wafers, Charge carriers,
Mobility, Etching, Conversion ratio,
Antireflection coatings

(U)

IDENTIFIERS: Diffusion length, Characteristic
curves, WUAFAPL31451959, PE62203F

(U)

This work on nonreflective vertical-junction
silicon solar cells has resulted in high conversion
efficiency radiation resistant solar cells. New
techniques of oxidation growth and the use of
photolithography enable the use of an orientation
dependent etch to produce grooves 5-10 microns wide
and over 100 microns deep. These silicon wafers
have been processed into solar cells with all of the
processes performed at temperatures compatible with
producing high efficiency solar cells. A
theoretical calculation of the generated current for
the vertical junction structure was performed. It
indicates the decreased dependence on carrier
diffusion length and, therefore, the reduced effect
or radiation damage on collection efficiency for
vertical junction solar cells. Vertical junction
solar cells 2 cm x 2 cm in size have been fabricated
with AMO conversion efficiencies greater than
13%. These cells have shown superior radiation
resistance. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A045 082 13/1 14/1 5/2
DECISIONS AND DESIGNS INC MCLEAN VAAn Attitudinal Study of the Home Market for
Solar Devices.

(U)

DESCRIPTIVE NOTE: Technical rept. Mar-Sep 77,
SEP 77 71p Campbell, Vincent N.; Brown,
Rex V.; Rhees, Thomas R.; Repici, Dominic J.REPT. NO. TR-77-5-25
CONTRACT: N00014-75-C-0426

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar heating, *Commercial equipment,
*Cost analysis, *Surveys, Public opinion,
Attitudes (Psychology), Market research,
Projection, Comparison, Public utilities,
Statistical analysis, Computer applications,
Correlation techniques

(U)

This study estimates that 1.1 million American residences would have home and hot water heated with solar energy by 1985 if the total cost averaged \$20 a month more than the cost of heating with fossil fuels, and initial costs were no barrier. An additional 7.2 million homes would have hot water alone heated with solar energy by 1985 if the total cost was \$5 a month more. These are fairly favorable cost assumptions under current conditions. Almost half (44%) of potential homeowners surveyed would prefer to have their living spaces and hot water heated with solar energy if the total cost averaged \$20 per month more than conventional heating and initial costs were no barrier. Although interest runs high, for various economic and technical reasons only about 1 in 75 American families may have both their home and water heated with solar energy by 1985. Any development that makes solar energy cost-competitive with fossil fuels for home heating will increase the level of market penetration. Another key to how quickly Americans will have solar homes is how fast builders and developers use solar energy in new homes and can assure good performance. (Author)

(U)

AD-A045 082

UNCLASSIFIED

PAGE

33

AD-A045 042

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A045 042 13/1
FRANK J SEILER RESEARCH LAB UNITED STATES AIR FORCE
ACADEMY COLOSecond Interim Technical Report on USAFA
Solar Test House.

(U)

DESCRIPTIVE NOTE: Rept. for May 76-Apr 77,
SEP 77 165p Eden, Anthony; Tinsley, John

T.:

REPT. NO. FUSRL-TR-77-0016

PROJ: 2303.2054

TASK: F1.50

MONITOR: CEEGO TR-77-34

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Original contains color plates:
All DDC reproductions will be in black and white. See
also Rept. no. FUSRL-TR-76-0008, AD-A030 843.

DESCRIPTORS: *Solar heating,

*Housing (Dwellings), *Air Force facilities,

*Solar panels, Retrofitting, Solar energy,

Energy conservation, Thermography,

Performance (Engineering), Heat exchangers,

Bleed systems, Arrays, Storage tanks, Flow rate,

Thermal insulation

IDENTIFIERS: WUFUSRL2303F175, PE61102F,

WUFUSRL20545005, PE64708F

(U)

(U)

This report describes the continuing performance of the first retrofit-constructed, solar-heated facility in the USAF, the Solar Test House at the USAFA. The attempts at improving the performance of the system have centered on the following: additional heat exchangers; bleed air line and valves; ground array angle changes; reduced volume of storage tank; control temperature reductions; flow rate reductions and new data gathering system. The Solar Test House was modified to conserve thermal energy by using urea foam insulation in the ceilings, vestibules on the doors, and linear diffusers for the duct outlets. Thermography studies have been started to explore the flow patterns through the solar arrays and correlate pictures with multiplexed sensor readings. Daily, monthly, and yearly data analysis is reported to show the effects of the various system and operational changes and the improved performance. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A043 951 13/1 10/1 3/2
LITTLE (ARTHUR D) INC CAMBRIDGE MASS

Solar Air - Conditioning Study.

(U)

DESCRIPTIVE NOTE: Final rept.,

APR 77 149P Merriam, Richard ;

REPT. NO. ADL-C-79679

CONTRACT: N68305-76-C-0029

PROJ: F57571

TASK: ZF57571001

MONITOR: CEL CR-77.018

UNCLASSIFIED REPORT

DESCRIPTORS: *Air conditioning equipment, *Solar energy, *Energy conversion, Cooling and ventilating equipment, State of the art, Life cycle costs, Heat transfer coefficients, Rankine cycle, Desiccants, Dehumidifiers, Refrigerants, Storage, Silica gel, Solar collectors, Buildings, Climate, Heat pumps
IDENTIFIERS: PE62765N

(U)

(U)

The state-of-the-art of solar cooling is evaluated to determine the near term performance potentials and life-cycle costs of the most promising approaches. The heat actuated absorption cycle, Rankine cycle, and desiccant dehumidification cycle are examined. The principles of operation are described, performance coefficients are reviewed, operating constraints are examined, and the commercial status of each approach is evaluated. An analysis of the major solar cooling demonstrations (as of 1976) is carried out. Savings-to-investment ratios are calculated for solar cooling systems in buildings in seven locations within the United States. (Author)

(U)

AD-A043 951

UNCLASSIFIED

PAGE

34

AD-A043 382

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A043 382 10/2
SPECTROLAB INC SYLMAR CALIF

High Efficiency Solar Panel (HESP).

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jun 75-15 Jun 77,

JUL 77 137P Scott-Monck, John ; Gay,

Charles ; Stolla, Paul ; Uno, Frank ;

CONTRACT: F33615-75-C-2028

PROJ: 682J

TASK: 04

MONITOR: AFAPL TR-77-36

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar cells, *Silicon, Power supplies, Solar panels, Spacecraft, Space technology, Energy conversion, Space environments, Environmental tests, Sizes (Dimensions), Thickness, Electrical resistance, Temperature coefficients, Radiation hardening, Materials, Antireflection coatings, Fabrication
IDENTIFIERS: High efficiency solar panel program, Nuclear radiation, Laser beams, Tantalum pentoxide, Electric contacts, Chromium, Tantalum, Palladium, Silver,
WUAFAPL682J0401, PE63401F

(U)

(U)

(U)

A family of high efficiency, weldable silicon solar cells, incorporating every feature of advanced technology developed in the past four years, was produced and subjected to space qualification testing. This matrix contained both field and non-field cells ranging in thickness from 0.10 mm to 0.30 mm, and in base resistivity from nominal two to one hundred ohm-cm. Initial power outputs as high as 20 mw/sq.cm (14.8% AMO efficiency) were produced by certain cell types within this group. All these cells had certain common features: a selectively etched front surface which reduced reflection losses, tantalum-palladium-silver front contacts, chromium-palladium-silver back contacts, junction depths approx 0.10 micrometers, and a tantalum pentoxide antireflection coating. For the field cells, acceptor doping was accomplished using a screen printed aluminum paste source. The baseline cell, which was 0.23 mm thick, nominal two ohm-cm, non-field type was produced in three sizes, 2 x 2 cm, 2 x 4 cm and 2 x 6 cm, the others in 2 x 2 cm form.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A042 584 3/2 10/1
OFFICE OF NAVAL RESEARCH LONDON (ENGLAND)

Efficiencies of Various Methods for Solar Energy Conversion.

JUN 77 34P Soper, W. G. ;
REPT. NO. ONRL-R-6-77

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar energy, *Energy conversion, Solar cells, Heat engines, Efficiency, Hydrogen, Thermodynamic try
IDENTIFIERS: Water splitting process, Thermal decomposition

Three methods are examined for converting solar energy to electricity or shaft work: heat engines, thermal decomposition of water to produce hydrogen and solar cells. Maximum efficiencies of conversion are found to lie between 20% and 50%. For most applications, the heat engine is superior to the water splitting process. (Author)

(U)
(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A042 178 10/1 5/3 14/1
CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Market Evaluation Study: Solar Heating and Domestic Hot Water Heating in DOD Buildings.

DESCRIPTIVE NOTE: Final rept.,
JUL 77 30P Windingland, L. M. ; Martel, C. ;
REPT. NO. CERL-TR-E-114

UNCLASSIFIED REPORT

DESCRIPTORS: *Economic analysis, *Solar heating, Hot water, Heating, Commerce, Cost analysis, Department of Defense, Facilities, Buildings
IDENTIFIERS: Solar space heating, Solar domestic hot water heating, Solar hot water heating, Energy utilization index

This study assesses the potential market for combined solar space heating and domestic hot water heating in Department of Defense (DOD) buildings. The study considers eight building categories: family housing, bachelor enlisted quarters, bachelor officers' quarters, administration, training, operational, community support, and recreational, which together contain 683 million sq ft (61.5 million m2), or 40 percent of the DOD inventory. All buildings were assumed to be oil heated. The buildings were grouped by climatological/solar regions, and the loads for each building type were determined by using the Energy Utilization Index (EUI) method. Solar system performance in each region was obtained by using the U.S. Army Construction Engineering Research Laboratory universal curve method. The life-cycle costs of providing solar space heating and domestic hot water heating were analyzed, and the DOD market potential for installed solar system costs of \$9, \$15, and \$20 per square foot were determined. The study shows that at an estimated initial fuel cost of \$3.50 MBtu for oil heating, a 10 percent cost of money, and an 8.5 percent overall fuel inflation factor,

(U)
(U)

AD-A042 584

UNCLASSIFIED

PAGE

35

AD-A042 178

UNCLASSIFIED

ZOM09

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A039 702 7/4 10/3
BOSTON UNIV MASS DEPT OF CHEMISTRYPhoton Energy Storage in Organic
Materials: The Case of Linked
Anthracenes.

DESCRIPTIVE NOTE: Technical rept. no. 6, 1 Nov 75-31

Dec 76, MAR 77 30P Jones, Guilford, II;
Bergmark, William R.; Reinhardt, Thomas E.;
CONTRACT: N00014-76-C-0442

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy storage, *Energy conversion,
*Photochemical reactions, *Isomerization,
*Anthracenes, *Solar energy, Photons, Test
equipment, Calorimetry, Enthalpy, Quantum
efficiency, Valence, Isomers, Organic materials
IDENTIFIERS: WUNROC51574(U)
(U)

Criteria for the photochemical storage of solar energy as latent heat are outlined. Energy-storing valence isomerizations which may be driven by irradiation and which may be reversed by heating with or without a catalyst are described. Data for photoisomerization which utilize 300-500 nm radiation with storage capacities of 50-250 cal/g and with storage efficiencies of 5-10% are summarized. New data concerning linked anthracenes which photoisomerize with $\phi = 0.2-0.4$ are provided. A photocalorimeter for the measurement of storage enthalpies is described. New systems for the practical conversion of solar energy are suggested.

(U)

AD-A039 702

UNCLASSIFIED

PAGE

37

AD-A039 546

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A039 546 10/1
TETRA TECH INC ARLINGTON VAU.S. Navy Energy R and D Progress
October 1976-March 1977.

DESCRIPTIVE NOTE: Technical rept.

APR 77 142P
REPT. NO. IT-A-872-77-316
CONTRACT: N00014-76-C-0239

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A023 340.
DESCRIPTORS: *Energy, *Energy conservation, *Naval research, *Synthetic fuels, Energy management, Research management, Synthetic fuels, Resource management, Geothermy, Solar energy, Natural resources, Braile, Coal gas, wind, Law (Jurisprudence), Legislation

(U)

This U.S. Navy Energy R and D Progress report summarizes the progress and accomplishments of the Navy Energy R and D Program for the period from October 1976 through March 1977. This report complements the U.S. Navy Energy R and D Program Plan, FY 1977-FY 1982, published in October 1976.

(U)

(Author)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A038 802 10/1
 TETRA TECH INC ARLINGTON VA
 Energy Fact Book-1977.

(U)

DESCRIPTIVE NOTE: Technical rept.
 APR 77 446P
 REPT. NO. TETRAT-A-642-77-306
 CONTRACT: N00014-76-C-0239

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Supersedes Rept. no. TETRAT-A-642-76-254 dated 15 Jul 76. AD-A028 284 and report dated 1975. AD-A029 331.
 DESCRIPTORS: *Energy management. *Energy.
 *Handbooks. Fossil fuels. Natural gas. Coal.
 Nuclear energy. Synthetic fuels. Fuel cells.
 Geothermy. Nuclear power plants. Petroleum products. Hydrogen. Magnetohydrodynamics. Solar energy. Wind. Thermoelectric power generation. Oil shales. Thermal power plants. Energy conservation. Legislation. Research management. Manuals. Foreign technology. Reviews. United States. Policies. Regulations. Crude oil. Reserves(Energy). Fuel consumption. Energy conversion
 IDENTIFIERS: Tar sands. Coal liquefaction. Ocean energy. Biomass energy conversion

(U)

(U)

The Energy Fact Book-1977 summarizes the present U.S. Energy situation; Energy R and D Legislation; Federal Government Energy R and D; and International Energy R and D. It includes a brief description of the various processes and developments related to hydrocarbon fuels, synthetic fuels, non-hydrocarbon energy sources and energy conservation. (Author)

(U)

AD-A038 802

UNCLASSIFIED

PAGE

38

AD-A038 600

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A038 600 10/2
 DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA
 Solar Energy.

(U)

DESCRIPTIVE NOTE: Report bibliography Jan 55-Dec 76.
 APR 77 211P
 REPT. NO. DDC/B18-77/03

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-771 750.
 DESCRIPTORS: *Solar energy. *Energy conversion.
 *Bibliographies. Power supplies. Electric power production. Solar radiation. Solar heating. Solar cells. Solar generators. Solar collectors. Solar furnaces. Indexes
 IDENTIFIERS: PE65801S

(U)

(U)

This bibliography is a selection of unclassified and unlimited distribution references on Solar Energy. These citations of reports present information on performance characteristics, fabrication, development of power levels and energy conversion. Corporate Author-Monitoring Agency, Subject, Title and Personal Author are provided. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 20M09

AD-A036 479 13/1
CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN
ILL

Market Evaluation Study: Solar Domestic
Water Heaters for DOD Barracks.

(U)

DESCRIPTIVE NOTE: Final rept..

FEB 77 39P Windingland, Larry; Walton, George; Hittle, Douglas;
REPT. NO. CERL-TR-E-102

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar heating, *Solar collectors, *Barracks, *Hot water, Life cycle costs, Cost analysis, Solar energy, Heating, Solar radiation, Geographic areas, Computerized simulation, Graph

(U)

This study assesses the potential market for solar domestic hot water systems in DOD bachelor enlisted and bachelor officer quarters (barracks). The number and locations of existing and planned bachelor enlisted and bachelor officer quarters in the United States are analyzed, and the locations where solar domestic water heating is most feasible are determined. Life-cycle costs of providing solar domestic water heating systems are analyzed and the DOD market potential for these systems determined for varying system costs. The results of more than 120 one-year solar hot water heating system simulations are presented along with a dimensionless graph and methodology which can be used to estimate solar hot water heater performance for building loads and sites other than those studied. The potential markets for solar collectors based on varying system costs are presented. Results indicate that at an anticipated future system cost of \$9/sq ft (\$97/sq m) of collector the probable market for solar collectors is 4.4 million sq ft (409 000 sq m). Over a 20-year life, the potential savings resulting from application of this collector area is estimated to be 4.5 million barrels of fuel and \$29 million. (Author)

(U)

AD-A036 479

UNCLASSIFIED

PAGE

39

AD-A035 603

UNCLASSIFIED

20M09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 20M09

AD-A035 603 10/1 20/13
CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN
ILL

Predicting the Performance of Solar Energy
Systems.

(U)

DESCRIPTIVE NOTE: Final rept..

JAN 77 45P Hittle, D. C.; Walton, G. N.; Holshouser, D. F.; Leverenz, D. J.;
REPT. NO. CERL-IR-E-98
PROJ. 4A763734DT08
TASK: 06

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar energy, *Heating plants, *Solar collectors, Solar radiation, Hot water, Life cycle costs, Cooling and ventilating equipment, Computerized simulation, Charts, Cost analysis
IDENTIFIERS: AST09, WU001, PE63734A

(U)

(U)

This report presents a method for making an energy and life-cycle cost analysis of solar energy systems. A graphical method is presented for predicting the performance of solar domestic hot water systems, solar heating systems, and solar heating and cooling systems. Methods for selecting the optimum collector area based on life-cycle cost and for systematically making detailed design calculations using the Building Loads Analysis and System Thermodynamics (BLAST) computer simulation program are also presented. Practical considerations for solar system designs are discussed. The methods presented provide the required accuracy for both initial evaluations and final design calculations. Examples are provided throughout the text to aid in using the methods described. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A034 141 13/1
COLD REGIONS RESEARCH AND ENGINEERING LAB HANOVER N H
Energy Conservation in Buildings. (U)

DESCRIPTIVE NOTE: Special rept.,
DEC 76 10P
REPT. NO. CRREL-SR-76-17 Ledbetter, C. Burgess ;
PROJ: 4A762719AT06
TASK: 01

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy conservation, *Buildings,
Architecture, Thermal insulation, Ventilation,
Windows, Solar heating, Illumination, Life cycle
costs (U)
IDENTIFIERS: PE62719A, WJ003, AST06 (U)

This report scans current building designs and describes, for the layman, ways that buildings could be designed for improved energy consumption. Topics of building design addressed are insulation, thermal bridges, ventilation, orientation, lighting, windows, and solar heat. (Author) (U)

AD-A034 141

UNCLASSIFIED

PAGE

40

AD-A032 221

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A032 221 10/1 10/2
RAND CORP SANTA MONICA CALIF
California's Energy Future. (U)

MAR 76 31P Morris, Deane N. ;
REPT. NO. P-5616

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Abridgement of Rept. no. 9-1793-CSA RF.

DESCRIPTORS: *Energy management, *California,
Energy conservation, Energy consumption, Emergency
rations, Petroleum products, Natural gas,
Hydroelectricity, Coal, Coal gas, Nuclear
energy, Geothermy, Crude oil, State government,
State law, Legislation, Offshore drilling,
Alaska, Pipelines, Solar energy, Transportation,
Residential section, Industrial plants, Public
utilities, Forecasting, Policies (U)
IDENTIFIERS: Energy crisis, Embargoes (U)

This paper presents an abridgement of the results of a Rand study on energy policy issues facing California, more fully reported in Energy Alternatives for California: Paths to the Future, R-1793-CSA/RF, and summarized in some detail in an Executive Summary, R-1793.1-CSA/RF. The study is concerned with the problems of an uncertain future. These problems are extraordinarily complex and interwoven. Under conditions of rapid change, the full consequences of policy actions are difficult to predict and policy objectives are difficult to define. In addition, the relationships between state and federal actions are poorly understood, involving issues of equity among individuals and regions, and issues of environment, health, safety, and land use. Simple solutions should not be expected in such a policy area. However, a number of recommendations are presented because policy decisions should be made on the basis of the best information available when the political process demands they be made. The brief summary presented here necessarily omits most of the rationale for our conclusions and recommendations, as well as a number of subsidiary conclusions. The interested reader should consult the full report for these additional details. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A031 164 10/1
INTERTECHNOLOGY CORP WARRENTON VA

Feasibility of Meeting the Energy Needs of
Army Bases with Self-Generated Fuels
Derived from Solar Energy Plantations
(Appendices A, B, and C).

(U)

DESCRIPTIVE NOTE: Final rept..
JUL 76 321P Szego, George C. ;
REPT. NO. ITC-260675-App
CONTRACT: DACA23-74-C-0009, ARPA Order-2630

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Appendices to AD-A031 163.
DESCRIPTORS: *Energy conversion, *Solar energy,
*Fuels, *Plants(Botany), *Energy storage,
Steam power plants, Fuel consumption, Military
facilities, Cooking devices, Climate, Electric
power production, Trees
IDENTIFIERS: *Energy plantation, Deciduous
trees

(U)
(U)

AD-A031 164

UNCLASSIFIED

PAGE

41

AD-A031 163

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A031 163 10/1
INTERTECHNOLOGY CORP WARRENTON VA

Feasibility of Meeting the Energy Needs of
Army Bases with Self-Generated Fuels
Derived from Solar Energy Plantations.

(U)

DESCRIPTIVE NOTE: Final rept..
JUL 76 149P Szego, George C. ;
REPT. NO. ITC-260675
CONTRACT: DACA23-74-C-0009, ARPA Order-2630

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Appendices, AD-A031
164.

DESCRIPTORS: *Energy conversion, *Solar energy,
*Fuels, *Plants(Botany), *Energy storage,
Synthetic fuels, Solar radiation, Natural gas,
Electric power production, Costs, Military
facilities
IDENTIFIERS: *Energy plantations

(U)
(U)

This project thoroughly investigated the possibility of collecting and storing solar radiation in plants especially grown for their fuel value as a source of fuel on U. S. Army bases. The study investigated the merit of producing this fuel at energy plantations at or near the bases. The fuel would be used for directly fired steam generators, hot water heaters, space heaters, and cooking. The research examined the major characteristics of energy plantations; analyzed plant-matter production rates from deciduous plants; and examined fuel consumption in stationary facilities at major troop training centers. The possibilities and requirements of energy plantations at Fort Benning, Fort Leonard Wood, and at Army bases in general were detailed. It was concluded that energy plantations could be feasible at approximately 15 large Army bases and that the cost of solid fuel produced from them would be approximately \$1/1 million Btu; the cost of synthetic natural gas produced from plants was determined to be approximately \$3.10 to \$4.20/1000 standard cu ft. Besides being a perpetually renewable fuel source, it was found that energy plantations could provide independence from other fuel sources, reduction in future environmental problems caused by present fuels.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A030 843 13/1 15/5 13/13 3/2

FRANK J SEILER RESEARCH LAB UNITED STATES AIR FORCE
ACADEMY COLOSolar Heating Retrofit of Military Family
Housing.

(U)

DESCRIPTIVE NOTE: Technical rept. Apr 75-Jun 76.

SEP 76 296P Nay, Marshall W., Jr.;

Davis, Jon M.; Schmiesing, Roy L.; Tolbert,

William A.;

REPT. NO. FJSRL-TR-76-0008

PROJ: FJSRL-7903-03-75

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar heating, *Retrofitting,
*Housing(Dwellings), *Military facilities,
*Solar energy, Civil engineering, Military
engineering, Maintenance, Cost analysis,
Inflation(Economics)

(U)

IDENTIFIERS: *Military family housing, Ground
array, B... array, Solar test house, Real
property

(U)

This interim technical report describes the programming, facility, acquisition and initial performance of the first retrofit constructed solar-heating facility in the United States Air Force, the Solar Test House at the United States Air Force Academy. The Air Force civil engineer is responsible today for operating and maintaining approximately 150,000 units of military family housing. As is the case in the private sector, the Air Force civil engineer is experiencing higher operating and maintenance costs due to inflation. Just recently, operating costs have begun to exceed maintenance costs. Higher energy related utility costs are believed responsible for this. Accordingly, Air Force civil engineers are interested in investigating the use of alternate energy schemes such as solar energy for its real property, not only in response to inflation in energy costs but also in response to energy crisis scenarios for a number of reasons which include: providing a mechanism to help offset rising utility costs; providing a mechanism to help guarantee mission continuation at installations that have their normal sources of conventional fossil fuels

(U)

AD-A030 843

UNCLASSIFIED

PAGE

42

AD-A030 529

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A030 529 10/1

NAVAL RESEARCH LAB WASHINGTON D C

Navy Applications for Terrestrial
Photovoltaic Solar Power.

(U)

DESCRIPTIVE NOTE: Interim rept.,

SEP 76 39p

K.; Guenzen, C. S.; Statler, R. L.; Hubler, G.

REPT. NO. NRL-MR-3363

PROJ: NRL-HQ1-55, RR012-06

TASK: RR012-06-41

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy conversion, *Photovoltaic
effect, *Solar energy, *Solar cells, Solar
radiation, Electric power, Cost effectiveness,
Navigational aids, Communication equipment,
Surveillance

(U)

The U.S. Army Mobility Equipment Research and Development Center (MERDC), Fort Belvoir has been tasked by the Assistant Secretary of Defense (Installations and Logistics) with Energy Research and Development Administration (ERDA) funds to prepare a Department of Defense proposal for installing terrestrial solar photovoltaic power in DoD operational systems. This report describes a survey made by the Radiation Effects Branch of the Radiation Technology Division to identify specific terrestrial solar photovoltaic power applications appropriate to DoD operational systems and facilities.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A028 548 4/1 8/3
ARIZONA UNIV TUCSON INST OF ATMOSPHERIC PHYSICS

A Two-Dimensional Global Climatic Model, (U)

JUL 75 18P Sellers, William D.;
CONTRACT: DAHC04-70-C-0038, AF-AFSR-2633-74

PROJ: 9751

TASK: 03

MONITOR: AFOSR TR-76-0784

UNCLASSIFIED REPORT

Availability: Pub. in Monthly Weather Review,
v104 n3 p233-248 Mar 76.

DESCRIPTORS: *Climate, *Atmosphere models, Computerized simulation, Ocean models, Global, Spatial distribution, Air water interactions, Seasonal variations, Two dimensional, Humidity, Equations of motion, Boundary layer, Cloud cover, Energy transfer, Solar energy, Digital computers, Mathematical prediction, Atmospheric circulation, Thermodynamics, Reprints

IDENTIFIERS: CDC 7600 computers, Ocean circulation (U)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A028 418 13/1
NAVAL ACADEMY ANNAPOLIS MD ENERGY-ENVIRONMENT STUDY GROUP

Feasibility of Heating Domestic Hot Water for Apartments with Solar Energy. (U)

DESCRIPTIVE NOTE: Final rept. 1 Jul 75-30 Jun 76,
MAR 76 14P Graham, Billie J. ;
REPT. NO. USNA-EPD-20

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar heating, *Solar collectors, Buildings, Hot water, Feasibility studies, Cost effectiveness

IDENTIFIERS: Apartments (U)

(U)

A feasibility study has shown that because of the age and nature of construction of the Wherry Apartments within the Annapolis Complex, the use of solar energy retrofitted to the existing heating system to supply heat for the space heating requirements is not economically justified. However, because the energy requirements for domestic hot water are essentially constant year round, the solar heat collecting system for this application is much more simple in design. For these reasons, the economical use of solar energy to heat the domestic hot water in these apartments appears promising. (Author)

(U)

AD-A028 548

UNCLASSIFIED

PAGE

43

AD-A028 418

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A028 332 13/1
TETRA TECH INC ARLINGTON VAAnalysis of the Technical and Cost
Feasibility of Solar and/or Wind Energy
Systems for Coast Guard Public Quarters.

(U)

DESCRIPTIVE NOTE: Final rept. on Task 3.
JUN 76 97P Arbo, P. E.; Reed, J. J.;
Garcia, A. F.; Hemphill, C. W.;
REPT. NO. TETRA-A-463-76-248
CONTRACT: DOT-CG-50960-A
PROJ: CG-8600
MONITOR: US 3 D-80-76

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar heating. *Wind. *Air.
Heating. Solar collectors. Coast Guard.
Buildings. Feasibility studies. Cost
effectiveness. Computer programs. Weather. Solar
energy

IDENTIFIERS: Wind heating

Energy requirements of existing Coast Guard-
owned public quarters were assessed based on a survey
of energy usage for FY 1975. A computerized
solar collector heat gain model was developed to
identify regions in which solar heating might be cost
beneficial under a conservative scenario and using
generalized data. A region containing 45 structures
(with 74 public quarters) at 10 sites was
identified. Energy requirements and regional
insulation and weather data for each specific site
were then used in the model to determine solar
collector requirements and cost break-even periods.
Based on these results, a solar heating
applications research project was outlined to
capitalize on solar energy. (Author)

(U)

AD-A028 332

UNCLASSIFIED

PAGE

44

AD-A028 083

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A028 083 10/3
BALLISTIC RESEARCH LABS ABERDEEN PROVING GROUND MD

Solar Energy Storage.

(U)

JUN 76 24P Gauss, Arthur, Jr.;
REPT. NO. BRL-1895
PROJ: DA-1-7-161101-A-91-A

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar energy. *Energy storage. Low
temperature. Reversible. Chemical reactions. Solar
heating. Solar collectors. Endothermic reactions.
Flat plate models. Heat of vaporization. Heat
pumps

(U)

Low temperature processes for solar energy storage
have been evaluated. Temperatures are low enough so
that relatively inexpensive flat plate solar
collectors can be employed. Low temperature
reactions are proposed which demonstrate the
principles of chemical storage of solar energy.
Certain of these reactions could be laboratory
tested with little difficulty since they yield
products which separate naturally. The most
practical low temperature system analyzed to date is
the heat of vaporization storage system. The
storage capacity for this system, typically about 200
kcal/liter, is close to an order of magnitude better
than conventional sensible heat storage in water.

(U)

(Author)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMD9

AD-A028 057 3/2 3/3
JOHNS HOPKINS UNIV LAUREL MD APPLIED PHYSICS LABPrediction of Solar Energetic Particle
Event Histories Using Real-Time Particle
and Solar Wind Measurements, (U)

JUN 76 22P Roelof, E. C.; Gold, R. E.

REPT. NO. Scientific-1
 CONTRACT: N00017-72-C-4401
 PROJ: AF-6813
 TASK: 681311
 MONITOR: AFGL TR-76-0136

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar corona, *Solar wind, Mapping,
 Magnetic fields, Solar structure, Solar energy,
 Solar cosmic rays, Transport properties, Velocity,
 Particles, Predictions, Real time
 IDENTIFIERS: Solar cycle 20, Heliographic
 longitude, Coronal particles, Coronal plasma

The comparatively well-ordered magnetic structure in the solar corona during the decline of Solar Cycle 20 has revealed a characteristic dependence of solar energetic particle injection upon heliographic longitude. When analyzed using solar wind mapping of the large scale interplanetary magnetic field line convection from the corona to the Earth, particle fluxes display an approximately exponential dependence on heliographic longitude. Small variations in the solar wind velocity (and hence the coronal connection longitude) can severely distort the simple coronal injection profile, the use of real-time solar wind velocity measurements can be of great aid in predicting the decay of solar particle events. Although such exponential injection profiles are commonplace during 1973-1975, they have also been identified earlier in Solar Cycle 20 (e.g., 1967 and 1969), and hence this structure may be present during the rise and maximum of the cycle, but somewhat obscured by greater temporal variations in particle injection. (U)

AD-A028 057

UNCLASSIFIED

PAGE

45

AD-A027 547

UNCLASSIFIED

ZOMD9

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMD9

AD-A027 547 20/12
DAVID SARNOFF RESEARCH CENTER PRINCETON N JApplication of Granular Semiconductors to
Photothermal Conversion of Solar Energy, (U)

NOV 75 4P Gittleman, J. I.;

CONTRACT: F44620-75-C-0057
 PROJ: AF-9764
 MONITOR: AFOSR TR-76-0672

UNCLASSIFIED REPORT

Availability: Pub. in applied physics letters, v28
 n7 p370-371, 1 Apr 76.
 DESCRIPTORS: *Semiconductors, *Solar energy,
 *Photothermal energy, Absorbers (Materials),
 Energy conversion, Reprints

A novel selective solar absorber, consisting of a dispersion of semiconductor grains in a low-dielectric-constant insulator is proposed. Calculations based on Maxwell-Garnett theory show that because of its lower reflectivity for $\lambda < 1.5$ microns this material is about 60% more efficient than silicon in converting solar energy to heat. Reflectivity measurements for Ge-Al₂O₃ films on aluminum agree with the predictions of the Maxwell-Garnett theory. The problems associated with the reduction to practice are discussed. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A027 110 13/1 3/2

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

Thin-Film Conducting Microgrids as
Transparent Heat Mirrors.

(U)

DESCRIPTIVE NOTE: Journal article,

DEC 75 4P Fan, John C. ; Bachner, Frank

J. ; Murphy, Ralph A. ;

REPT. NO. JA-4567

CONTRACT: F19628-73-C-0002

PROJ: AF-649L

MONITOR: ESD TR-76-174

UNCLASSIFIED REPORT

Availability: Pub. in Applied Physics Letters,
vol. 28 p440-442, 15 Apr 76.DESCRIPTORS: *Solar heating, *Solar collectors,
*Solar energy, *Mirrors, *Solar radiation, Thin
films, Transparencies, Reprints
IDENTIFIERS: Heat mirrors, Infrared
reflectivity

(U)

(U)

A new type of transparent heat mirror for solar-energy applications has been fabricated by chemically etching a Sn-doped In2O3 film to form a transparent conducting microgrid. For square openings 2.5 micrometers on a side, separated by lines 0.6 micrometers wide, the solar transmission increases from 0.8 for the original continuous film to 0.9 for the microgrid. Although 65% of the area of the film is removed by etching, the infrared reflectivity decreases by only 9%, from 0.91 to 0.83. A smaller decrease in the infrared reflectivity may be possible if materials with higher optical conductivity are used. (Author)

(U)

AD-A027 110

UNCLASSIFIED

PAGE

46

AD-A027 105

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A027 105 13/1 3/2

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

Transparent Heat Mirrors for Solar-Energy
Applications.

(U)

DESCRIPTIVE NOTE: Journal article,

NOV 75 8P Fan, John C. ; Bachner, Frank

J. ;

REPT. NO. JA-4555

CONTRACT: F19628-73-C-0002

PROJ: AF-649L

MONITOR: ESD TR-76-173

UNCLASSIFIED REPORT

Availability: Pub. in Applied Optics, vol. 15 no
p1012-1017 Apr 76.DESCRIPTORS: *Solar heating, *Solar radiation,
*Mirrors, *Solar energy, *Solar collectors,
Films, Transparencies, Reprints
IDENTIFIERS: Heat mirrors, Infrared
reflectivity

(U)

(U)

IAC ACCESSION NUMBER: MCIC-096998
IAC DOCUMENT TYPE: MCIC -JOURNAL ARTICLES--
Transparent heat-mirror films, which transmit solar radiation but reflect in thermal radiation, have potentially important applications in solar/thermal/electric conversion, solar heating, solar photovoltaic conversion, and window insulation. We have used rf sputtering to prepare two types of films: TiO2-Ag/TiO2 and Sn-doped In2O3. To characterize the properties of heat-mirror films for solar-energy collection, we define the parameters Alpha sub eff, the effective solar absorptivity, and Epsilon sub eff the effective infrared emissivity. For our Sn-doped In2O3 films, Alpha sub eff/Epsilon sub eff is comparable to the values of Alpha Epsilon reported for the leading selective absorbers. Even higher values of alpha sub eff/epsilon sub eff are obtained for the TiO2-Ag/TiO2 films. (Author)

(U)

IAC SUBJECT TERMS: M--(U)TRANSPARENT HEAT MIRRORS, THIN FILMS, COATINGS, TITANIUM DIOXIDE/SILVER-TITANIUM DIOXIDE, INDIUM OXIDE, TIN ADDITIONS, SPUTTERING, SOLAR ABSORPTIVITY, INFRARED EMISSIVITY, FLAT-PLATE COLLECTORS, SOLAR ENERGY APPLICATIONS.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A026 962 10/1
OFFICE OF NAVAL RESEARCH LONDON (ENGLAND)Energy and Physics--General Conference of the
European Physical Society (3rd) Held in
Bucharest (Romania) on 9-12 September
1975.DESCRIPTIVE NOTE: Conference rept.,
JUN 76 17P Potter, Roy F. ;
REPT. NO. ONRL-C-14-76

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy, *Meetings, Solar energy,
Energy conversion, Energy storage, Thermoelectric
energy, Transports, Rumania
IDENTIFIERS: Energy transport

This report covers portions of most of the plenary sessions including the opening session of the Conference, Physics and Energy; Energy Strategies; Maturity of Nuclear Energy; Use of Solar Energy; New Goals and Challenges; Photochemistry; Thermoelectric Research; Energy, Dissipation and Structure; Transport and Storage of Energy. Other sessions covered are on solar energy use, transport and storage of energy and energy research strategies.

(U)
(U)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A026 660 5/4 10/2 13/1
RAND CORP SANTA MONICA CALIFIs the Right to Light a California
Necessity.DEC 75 31P Harnis, William R. ;
REPT. NO. P-5558

UNCLASSIFIED REPORT

DESCRIPTORS: *Sunlight, *State law, *Land use,
User needs, Regulations, California, Energy
consumption, Solar heating, High costs, Solar
energy, Air conditioning equipment, Life cycle
costs, Resource management

(U)

This report is the statement prepared for delivery before the California State Assembly Committee on the Judiciary. California's favorable coastal climate and solar heating load, provide an ultimate potential for solar heating and cooling. The inadequacy of California's regulatory framework in facilitating and safeguarding property interests in sunlight is by no means the primary impediment to solar energy development. The relatively high cost of solar heating, and even higher cost of solar cooling deter even those potential customers who are aware of life cycle costs. Lack of a legally-protected interest in sunlight is not the primary impediment but may be a sufficient impediment to widespread solar heating and cooling outside rural and new subdivision areas. In contrast to the economic impediments to solar energy utilization, the legal impediments may be mitigated at modest cost by some combination of transferable solar energy rights (ISER's), transferable development rights (TDR's), and land use plans, zones, or contracts for solar system districts and high rise development districts.

(U)

AD-A026 962

UNCLASSIFIED

PAGE

47

AD-A026 660

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD-A026 588 13/1
CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Interim Feasibility Assessment Method for Solar Heating and Cooling of Army Buildings. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 76 51P Hittle,Doug ;Holshouser,D. ;

Walton,G. ;
REPT. NO. CERL-TR-E-91
PROJ: RDT/E-4-A-763734-DT-08
TASK: RDT/E-4-A-763734-DT-0806

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar heating, *Solar energy,
*Cooling, Buildings, Military facilities,
Weather, Computerized simulation, Time dependence,
Feasibility studies, Solar collectors, Life cycle costs (U)
IDENTIFIERS: *Solar cooling (U)

This report discusses design considerations for heating and cooling buildings with solar energy. General criteria are provided for selecting the components and configuration of such a system. The report presents parametric computer simulation studies for two buildings of typical construction at five locations in the United States. Hourly building heating and cooling loads were computed for each building at each site using the National Bureau of Standards Load Determining Program (NBSLD) and hourly weather data. Using these loads, hourly simulation studies were performed to determine the effects of collector type, collector area, collector tilt angle, thermal energy storage tank volume, and heat exchanger effectiveness on simulated solar heating and cooling system performance. The results of more than 200 one-year solar system simulations are presented. In addition, a dimensionless graph and methodology are provided which can be used to estimate solar heating and cooling system performance for buildings and sites other than those studied. The report provides an explanation and an example of an approach for determining the life cycle cost of a solar-equipped building as compared to a conventional installation. (U)

AD-A026 588

UNCLASSIFIED

PAGE

48

AD-A026 041

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD-A026 041 13/1
CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN ILL

Method for Estimating Solar Heating and Cooling System Performance. (U)

76 14P Hittle,Douglas C. ;Walton,
George N. ;Holshouser,Donald F. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar heating, *Solar energy, *Air conditioning equipment, Buildings, Geographical distribution, Solar radiation, Computerized simulation, Climate (U)

During FY75 the Construction Engineering Research Laboratory, under funding from the Office of the Chief of Engineers, engaged in a research effort to develop a method for the preliminary determination of the feasibility of heating and cooling buildings with solar energy. The principle objective of the work effort was to provide a simple means for estimating the expected performance of a given solar heating and cooling system when applied to typical buildings in various regions of the Country. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMD9

AD-A025 922 10/3
SPECTROLAB INC SYLMAR CALIF

Low Reflectivity Solar Cells. (U)

DESCRIPTIVE NOTE: Final rept. 31 May 74-4 Jan 76.
JAN 76 83P Stella, Paul; Avery, James;Scott-Monck, John;
REPT. NO. 380-4680F
CONTRACT: F33615-74-C-2044
PROJ: AF-3145
TASK: 314519
MONITOR: AFAPL TR-75-98

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar cells, *Antireflection coatings, Reflectivity, Reflection, Reflectance, Etching, Silicon, Quartz, Sodium, Potassium compounds, Hydroxides (U)

IDENTIFIERS: *Silicon solar cells, Solar energy conversion, Photovoltaic conversion (U)

Techniques for both reducing and changing specular reflectance from silicon solar cell assemblies (cell and cover) were developed. Mechanical and chemical treatments of quartz cell covers yielded surfaces that acted like nearly perfect diffusers of incoming visible radiation. A four order of magnitude reduction in specular reflectivity was achieved in this manner. Selective etchings and multiple antireflection (AR) coatings were used to reduce the total reflection from the cell. Etches such as sodium and potassium hydroxide reduced the total reflection over the entire silicon cell spectrum (350-1100 nm) to below one percent, with a corresponding increase in output current of nearly eight percent over conventionally prepared surfaces. Some degradation in fill factor was observed with the etched surface so that the current increase at the load voltage was somewhat less than at short circuit. (U)

AD-A025 922

UNCLASSIFIED

PAGE

49

AD-A025 719

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A025 719 10/2 22/2
TEXAS INSTRUMENTS INC DALLAS SEMICONDUCTOR GROUP

Development of Vertical Multijunction Solar Cells for Spacecraft Primary Power. Volume II. (U)

DESCRIPTIVE NOTE: Final rept. Jun 74-Jun 75.
NOV 75 54P Lloyd, W. W.; Yeakley, Richard; Fuller, Clyde; Malone, Farris;
REPT. NO. 11-03-75-41
CONTRACT: F33615-73-C-2019
PROJ: AF-3145
TASK: 314519
MONITOR: AFAPL TR-74-45-Vol-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Jun 74, AD-A001 084.

DESCRIPTORS: *Solar cells, Spacecraft, Power supplies, Sourceborne, Radiation hardening, Long wavelengths, Response (U)

IDENTIFIERS: *Vertical multijunction solar cells, Solar arrays (U)

Based on the types of vertical multijunction cells developed in the first half of this contract (Report No. AFAPL-74-45), the open-groove type configuration was selected since early characterization results showed the predicted improvement in long-wave response and tolerance to electron bombardment. In addition, a process was developed that converts the surface of this cell into an effective black body, which also has the potential of reducing the area of the collecting junction. Cells made using the black-surface, open-groove structure have demonstrated that the short circuit current has dropped only 13% after exposure to 10 to the 16th power, kev electrons; the blue response is not limited by the deep grooves; the long-wave response can be 30% higher than for a conventional cell; actual efficiencies of 9% have been obtained, with a clear potential of reaching 14%. Together with the significantly simplified processes developed for the fabrication of the cells, these results show that the Vertical Multijunction cell is a viable device for spacecraft power. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A025 033

312

AIR FORCE GEOPHYSICS LAB HANSCOM AFB MASS

Production of Flame-Produced H₂ and He₃.

(U)

FEB 75 7P Potwell, Paul L. :

REPT. NO. AFGL-TR-75-0107

PROJ: AF-8600

TASK: 860007

UNCLASSIFIED REPORT

Availability: Pub. in Jnl. of Geophysical Research, 78(14) p709-714, 1 Feb 76.

DESCRIPTORS: *Solar flares, *Isotopes, Protons, Deuterons, Helium, Hydrogen, Reaction kinetics, Solar atmosphere, Monte Carlo method, Solar physics, Sun, Models, Solar energy, Reprints
IDENTIFIERS: Solar models

(U)

Recent measurements indicate the enhanced production of He₃ but not of H₂ in some solar flares. This leads to an apparent paradox if the reaction $H + He^4 \rightarrow He^3 + He^4$ is the dominant mode of production. A detailed Monte Carlo calculation for this reaction is performed to determine the kinematical regions where He₃ dominates. It is found that for the thick-target case, no such region exists. For the thin-target case, He₃ dominates in the backward and perpendicular directions relative to the incident proton. Obtaining reliable production ratios above approximately 10 Mev/nucleon is not possible because of uncertainties in the production cross section at high incident proton energies (E sub p = 400 Mev). One possibility recently proposed by Ramaty and Kozlovsky is that the measured He₃ are accelerated after being produced by protons impinging on the solar atmosphere. The author examines this hypothesis and concludes that the required postproduction acceleration must occur over very small distances on a solar scale and before photospheric turbulence mixes the separated H₂ and He₃. It is concluded that a thick-target model based on primary protons mirroring just below the solar surface is the most likely source of the He₃ enriched events.

(U)

AD-A025 033

UNCLASSIFIED

PAGE

51

AD-A024 234

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A024 234

20/12

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

Properties of Sn-Doped In₂O₃ Films
Prepared by RF Sputtering.

(U)

DESCRIPTIVE NOTE: Journal article.

MAR 75 8P Fan, John C. C. ;Bachner,

Frank J. :

REPT. NO. JA-4487

CONTRACT: F19628-73-C-0002

PROJ: AF-643-

MONITOR: ESC TR-75-345

UNCLASSIFIED REPORT

Availability: Pub. in Jnl. of the Electrochemical Society, 122 n12 p1719-1725 Dec 75.
DESCRIPTORS: Thin films, *Semiconductors, *Solar collectors, *Solar energy, Mirrors, Substrates, Crystallography, Electron irradiation, Sputtering, Reflectivity, Reprints
IDENTIFIERS: Heat mirrors, Indium oxides

(U)

An rf sputtering process has been used without postdeposition annealing to prepare Sn-doped In₂O₃ films with low electrical resistivity (down to 0.0002 ohm-cm), high visible transmission, and high infrared reflectivity (up to 93% at 10 microns) for applications as transparent conductors and heat mirrors. Substrate heating is accomplished entirely by the electron bombardment intrinsic to rf sputtering. Rather than by using an auxiliary resistance heater, the film properties improve with increasing substrate temperature up to 650 C, the maximum employed, and are relatively independent of other sputtering parameters. The electrical and optical properties of the films do not depend significantly on the crystalline orientation or the degree of texturing, or substrate material (glass, fused silica, and single crystal Al₂O₃ and CaF₂).

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A022 977 17/2.1 20/7 3/2
OHIO STATE UNIV RESEARCH FOUNDATION COLUMBUSInfluence of the Solar Electron Energy
Distribution on the Microwave Spectrum of
Gyro-Synchrotron Radiation.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 72-30 Sep 75,
FEB 76 34P Ko,Hsien C. :Chuang,Chiwei

CONTRACT: F19628-73-C-0004

PROJ: AF-4643

TASK: 464303

MONITOR: AFGL TR-76-0030

UNCLASSIFIED REPORT

DESCRIPTORS: *Synchrotrons, *Solar energy,
*Communication and radio systems, Microwaves,
Solar radiation, Solar flares, Electron energy,
Protons, Charged particles, Emissivity(U)
(U)

IDENTIFIERS: Gyro synchrotrons

The volume emissivity formula for gyro-synchrotron radiation from an ensemble of electrons having a power-law energy distribution and an isotropic pitch-angle distribution is presented. Numerical calculations of the radiation spectrum were made for four electron kinetic energy ranges (10 keV - 100 keV, 100 keV - 1 MeV, 1 MeV - 10 MeV, and 10 keV - 10 MeV), and for four values of electron energy spectral index. The influence of electron energy distribution on the radiation spectrum is discussed. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A022 829 10/2
RAND CORP SANTA MONICA CALIFThe Potential of Indigenous Energy
Resources for Remote Military Bases.

(U)

DESCRIPTIVE NOTE: Interim rept.,

MAR 76 141P Connors,T. T. :Morrison,P.

F. :Mo,W.C. C. :Salter,R. G. ;

REPT. NO. R-1798-ARPA

CONTRACT: DAH-C15-73-C-0181, ARPA Order-189

UNCLASSIFIED REPORT

DESCRIPTORS: *Electric power production, *Energy storage, *Energy conservation, Resources, Power supplies, Solar radiation, Wind, Ocean waves, Energy conversion, Military facilities, Remote areas

(U)
(U)

IDENTIFIERS: Indigenous energy resources

An examination of the potential of solar radiation, wind, and ocean waves to provide thermal and electrical power to standard remote military bases. Sufficient energy is shown to be available in the North Atlantic, Indian, and Pacific Oceans, and the Caribbean to satisfy average remote base power requirements. A survey of indigenous energy technologies indicates that considerable research is needed to bring wave power recovery up to the level of solar and wind systems. An analytic computer model is used to show that indigenous energy systems are extremely costly, in part because of storage requirements, and that a mix of indigenous and conventional (petroleum) systems would be far less so. Since even a combined system is shown to exceed the cost of a pure conventional power supply, use of indigenous energy is justifiable only as a means of reducing the dependence of remote bases on petroleum fuels. (Author)

(U)

AD-A022 977

UNCLASSIFIED

PAGE

52

AD-A022 829

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A022 080 10/2 13/1
TETRA TECH INC ARLINGTON VAProposal Evaluation - Ocean Thermal
Gradients and Solar Ponds.

(U)

DESCRIPTIVE NOTE: Technical rept.,
MAR 74 25P Tomlinson, Glen ;
REPT. NO. TETRAT-A-642-75-121
CONTRACT: N00014-74-C-0348

UNCLASSIFIED REPORT

DESCRIPTORS: *Electric power plants, *Solar
generators, Water, Solar heating, Temperature
gradients, Pacific Ocean Islands, Israel,
Power supplies, Naval shore facilities, Closed
cycle systems, Ponds, Heat sinks, Sea water,
Salt water, Oceans, Costs, Construction,
Proposals, Feasibility studies

(U)

The information received for evaluation contained
two proposals: the first proposes a 150-Mw
solar pond/thermal gradient power plant for Guam
and the second proposes construction of a 5-10Mw
plant in Israel. The basic concepts to be
employed in the two systems are similar in that they
both employ solar-heated water as an energy source. (U)

AD-A022 080

UNCLASSIFIED

PAGE

53

AD-A022 079

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A022 079 13/1
TETRA TECH INC ARLINGTON VA

Absorption Air Conditioning.

(U)

DESCRIPTIVE NOTE: Technical rept.,
AUG 74 21P Hedman, Paul ;
REPT. NO. TETRAT-A-642-75-130
CONTRACT: N00014-74-C-0348

UNCLASSIFIED REPORT

DESCRIPTORS: *Air conditioning equipment,
*Absorption, Steam, Absorbers(Materials),
Absorbers(Equipment), Lithium compounds,
Bromides, Salts, Evaporators, Heat exchangers,
Steam condensers, Compression, Solar energy,
Cost analysis, Naval equipment
IDENTIFIERS: *Absorption air conditioning(U)
(U)NDS, Indian Head has proposed a study of steam
absorption air conditioning. This paper addresses
the utilization of waste steam for absorption air
conditioning of Navy facilities and compares
absorption and compression systems. Accordingly,
the specific study and costs for the singular
application at NDS, Indian Head will not be
addressed. Instead, a general discussion of
absorption versus compression air conditioning will
be presented. (U)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A020 794 10/1
NOTTINGHAM (H D) AND ASSOCIATES INC MCLEAN VA

Review and Analysis of National Energy
Research and Development Programs and
Proposals.

DESCRIPTIVE NOTE: Final rept.,
JAN 76 433P Singh, T. ; Soni, J. S. ;
CONTRACT: DAAG53-75-C-0233
MONITOR: USAFESA-RT 2006

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated 7 Oct 74,
AD-A008 887.

DESCRIPTORS: *Energy, Nuclear energy, Solar
energy, Geothermal, Energy conversion, Energy
conservation, Energy storage, Shale, Transmission
lines, Impact, Reviews, Catalogs, Surveys,
Planning

IDENTIFIERS: *Research projects, Geothermal
energy, Shale oil, Photovoltaic conversion,
Solar space heating, Wind power, Solar sea power
plants, Biological energy conversion,
Environmental impacts

(U)

(U)

Tabulated and analyzed in this report are recently
completed and on-going energy R and D programs by
pertinent governmental and industrial organizations.
The five major areas of discussion in this study
include: nuclear fission; renewable energy
resources; conversion systems; energy conservation;
and multi-directional energy R and D studies.
Outlined are the state-of-the-art; established
national goals and objectives; nature of R and D
studies currently underway; and recommendations for
future R and D work by the U.S. Army.

(U)

AD-A020 794

UNCLASSIFIED

PAGE

54

AD-A020 776

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A020 776 3/2
AIR FORCE CAMBRIDGE RESEARCH LABS HANSCOM AFB MASS

Interpretation of Flare-Produced Proton
Spectra,

(U)

MAY 74 6P Rothwell, Paul L. ; Katz,

Ludwig ; Yates, G. Kenneth ;

REPT. NO. AFRL-TR-76-0042

PROJ: AF-8600

TASK: 860007

UNCLASSIFIED REPORT

Availability: Pub. in Jnl. of Geophysical
Research, v80 n34 p4757-4761, 1 Dec 75.

DESCRIPTORS: *Solar spectrum, *Protons, *Solar
flares, Power spectra, Anomalies, Solar energy,
Solar physics, Energy storage, Chromosphere,
Solar corona, Diffusion, Interplanetary space,
Reprints

(U)

Flare-produced proton (1.3-40 MeV) energy
spectra from the extramagnetospheric satellite QV5-
6 (1959-0428) are examined for the October 29
to November 5, 1972 period. The higher-energy
portion of the spectra is further defined by
simultaneous measurements obtained from the polar-
orbiting satellite S72-1 (1972-0768). A

turnover in the spectra below approximately 4 MeV
is observed. The spectral shape is examined in
terms of either: (1) dE/dx losses in a
chromospheric/coronal storage region; or (2)
adiabatic deceleration with an energy-dependent
interplanetary diffusion coefficient(K). It is
concluded that the data are consistent with dE/dx
losses if the protons were stored at an altitude of
less than 3 R sub s. The possibility was also
examined of adiabatic deceleration in the solar wind.
An order of magnitude calculation indicates that
K (10 MeV) approximately 7.5 x 10 to the 21st
power sq cm/s. a value too high for diffusion-
convection to be a viable explanation for the
observed spectral shape.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A020 466 10/2 6/6 13/2 20/13
14/2 20/8
OFFICE OF NAVAL RESEARCH LONDON (ENGLAND)

Annual International Seminar of the
International Centre for Heat and Mass
Transfer (8th).

(U)

DESCRIPTIVE NOTE: Conference rept.,
DEC 75 23P Lopina, Robert F. ;
REPT. NO. ONRL-C-20-75

UNCLASSIFIED REPORT

DESCRIPTORS: *Electric power production, *Heat
transfer, *Mass transfer, *Energy, Thermal
pollution, Air pollution, Solar energy, Nuclear
energy, Geothermy, Great Britain
IDENTIFIERS: *Geothermal energy, Environmental
pollution, Power production

(U)

(U)

This report summarizes most of the papers given at
a one-week meeting on Future Energy Production
- Heat and Mass Transfer Problems. Problems
associated with solar, nuclear, geothermal and coal
energy production were discussed. Papers were also
given on alternative energy sources and impacts of
energy production on the environment.
(Author)

(U)

AD-A020 466

UNCLASSIFIED

PAGE

55

AD-A017 297

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A017 297 13/1
NAVAL ACADEMY ANNAPOLIS MD ENVIRONMENTAL PROTECTION
RESEARCH AND DEVELOPMENT TEAM

Cost Benefit of Utilizing Thermal Storage
for Peak Cooling Power Leveling.

(U)

DESCRIPTIVE NOTE: Supplementary rept.,
SEP 75 21P Morgan, Bruce H. ;
REPT. NO. USNA-EPRD-13

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy storage, Solar heating,
Barracks, Buildings, Cost estimates
IDENTIFIERS: *Off peak energy storage, Solar space
heating, Apartment buildings

(U)

(U)

Calculations indicate that provision for diurnal
ice storage, reducing peak air conditioning power
demand, would save money by decreasing the amount and
therefore the cost of the electrical generating
equipment which must be installed. The thermal
storage facility of a solar heating system might be
used for this purpose, perhaps with chilled water
rather than ice.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A015 672 4.1
 CALIFORNIA UNIV RIVERSIDE INST OF GEOPHYSICS AND
 PLANETARY PHYSICS

Upper Limits to the Quiet-Time Solar
 Neutron Flux from 10 to 100 MeV.

(U)

DESCRIPTIVE NOTE: Technical rept.,

JUN 75 31P Moon, Shin ;Simnett, George
 M. ;White, R. Stephen ;
 REPT. NO. IGPP-UCR-75-15
 CONTRACT: N00014-69-A-0200-5004, NGR-05-008-022

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar radiation. *Neutron flux,
 Limitations, Quiet. Solar energy, Temperate
 regions, Neutron detectors, Balloons, Neutron
 scattering, Telescopes, High altitude

(U)

The UCR large area solid-angle double scatter
 neutron telescope was flown to search for solar
 neutrons on 3 balloon flights on September 26,
 1971, May 14, 1972 and September 19, 1972. The
 first two flights were launched from Palestine,
 Texas and the third from Cape Girardeau,
 Missouri. The float altitude on each flight was
 at about 5 g/sq cm residual atmosphere. Neutrons
 from 10 to 100 MeV were measured. No solar
 flares occurred during the flights. Upper limits to
 the quiet time solar neutron fluxes at the 95%
 confidence level are .00028, .00046, .00096 and
 .00090 neutrons/sq cm-sec in the energy intervals of
 10-30, 30-50, 50-100 and 10-100 MeV,
 respectively. (Author)

(U)

AD-A015 672

UNCLASSIFIED

PAGE

55

AD-A014 858

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A014 858 10/1
 AIR FORCE WEAPONS LAB KIRTLAND AFB N MEX

Alternative Energy Sources for United
 States Air Force Installations.

(U)

DESCRIPTIVE NOTE: Final rept. Jul 74-Jun 75,

AUG 75 111P Dewitte, Michael D. ;
 REPT. NO. AFWL-TR-75-193
 PROJ: AF-2102
 TASK: 21022E04

UNCLASSIFIED REPORT

DESCRIPTORS: *Air Force facilities. *Air Force
 planning. Fuel consumption, Coal. Natural gas.
 Fuel oil, Electricity, Forecasting, Substitutes,
 Solar energy, wind, Geothermy, Energy
 conversion, Reviexs

(U)

IDENTIFIERS: Fuel substitution. Energy
 consumption, Electric power demand, Wind power,
 Geothermal energy, *Energy policy

(U)

This report is concerned with the consumption and
 cost of facilities-related energy, both present and
 future, at Air Force installations, and it
 presents a basic assessment of the potential of
 alternative energy sources. In particular-solar,
 wind, and geothermal energy resources are
 investigated.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A014 534 10/1
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE
VA

Research and Development Project for New
Energy Technology (Sunshine Plan).

(U)

74 786P
REPT. NO. FSTC-HT-23-0019-75

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. of mono. VIITA, n.p., 1974
4100.

DESCRIPTORS: *Solar energy, Solar heating,
Cooling, Solar generators, Petroleum products,
Coal gas, Liquefied gases, Electric power
production, Hydrogen, Geopotential, Energy
management, Technology, Japan, Translations
IDENTIFIERS: *Energy technology, *Geothermal
energy, *Manufactured gas, *Hydrogen based energy,
Synthesis gas, Solar space heating, Solar air
conditioning, Solar power generation, Coal
gasification, Coal liquefaction, Energy policy,
Technology assessment

(U)

(U)

In view of the world-wide energy crisis and
environmental problems, it is recommended that
Japan, as a country with no noteworthy natural
resources, should immediately establish a national
project in order to advance research and development
programs of new energy technologies. The present
status of technological development in Japan and
in other countries is reviewed. Solar energy,
geothermal energy, synthetic natural gases and
hydrogen energy are chosen as important subject
matters of future research and development. If the
presented time schedule is followed, a fairly large
portion of the total demand for energy will be
supplied by these new energy sources by the year
2000.

(U)

AD-A014 534

UNCLASSIFIED

PAGE

57

AD-A012 702

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A012 702 7/4 21/4
NATIONAL ACADEMY OF SCIENCES-NATIONAL RESEARCH COUNCIL
WASHINGTON D C

Conference on Thermodynamics and National
Energy Problems Held at Airline House,
Warrenton, Virginia on Jun 10-12, 1974.

(U)

DESCRIPTIVE NOTE: Final rept. Jun 74-May 75,
JUN 74 442p Beckett, C. W.; Brewer, Leo
; Holler, C. E., Jr.; Hubbard, Ward; Rossini,
F. D.;

CONTRACT: AF-AFOSR-2741-74
PROJ: AF-9750
TASK: 975001

UNCLASSIFIED REPORT

DESCRIPTORS: *Thermodynamics, *Meetings, *Energy
management, Chemicals, Enthalpy, Entropy,
Thermal properties, Coal, Fossil fuels, Nuclear
energy, Energy storage, Solar energy
IDENTIFIERS: Geothermal energy

(U)

(U)

This volume is the report of the Conference on
Thermodynamics and National Energy Problems
which was held at Airline House, Warrenton,
Va, 10-12 June 1974, and attended by about 110
scientists and engineers from universities, industry
and government. The purpose of the Conference
was to arrive at both the needs for thermodynamic
data in a developed program to achieve national
energy self-sufficiency, and the capability of
thermodynamicists to meet those needs. To achieve
this purpose, most of the time of the Conference
was spent in four parallel panel discussions on
on coal, fossil fuels other than coal, nuclear
energy, geothermal energy, and solar energy and
energy storage. The report includes a summary of
each panel's recommendations and reasons for them, an
overview summary, texts of prepared presentation, and
all pertinent discussion.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMD9

AD-A011 084 22/2 10/2
ROYAL AIRCRAFT ESTABLISHMENT FARNBOROUGH (ENGLAND)

Work in UK on the Applications of Solar
Cells in Space. (U)

DEC 74 16P Treble, F. C. ;
REPT. NO. RAE-TR-74159
MONITOR: ORIC BR-44998

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar cells, *Photovoltaic effect,
Scientific satellites, Spacecraft components,
Silicon, Cadmium sulfides, Reviews, Great
Britain

IDENTIFIERS: Ariel 3 satellite (U)
(U)

British efforts and achievements in the field of
photovoltaic solar energy conversion in space over
the past 14 years are reviewed. The satellites
powered by British solar cells are listed and the
Ariel 3 array is described in detail by way of an
introduction to the subject. Silicon cells of
conventional thickness have been developed to a
conversion efficiency exceeding 11.5% and thin
cells with a superior power-to-weight ratio have been
developed and manufactured in pilot production.
Other achievements are a cheaper and better type of
glass covering, an ultra-thin integral glass coating
and lightweight flexible cadmium sulfide cells. In
anticipation of future multikilowatt power
requirements, a prototype lightweight deployable
array embodying advanced concepts has been built and
qualified for prolonged operation in the
geostationary orbit. (U)

AD-A011 084

UNCLASSIFIED

PAGE

58

AD-A010 712

UNCLASSIFIED

ZOMD9

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMD9

AD-A010 712 10/1
HITMAN ASSOCIATES INC COLUMBIA MD

Projections of Energy Availability, Cost, and
Aggregate Demand for 1975, 1980, 1985 and
1990. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 75 137P Berstein, H. M. ; Hinkle, B.
K. ; Bazques, E. O. ;
CONTRACT: DAC488-74-C-0040
MONITOR: CERL TR-E-58

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy, Petroleum products, Natural
gas, Coal, Nuclear energy, Hydrodynamics, Solar
energy, Geothermy, Electric power, Electricity,
Abundance, Costs, Fuel consumption,
Forecasting

IDENTIFIERS: *Energy demand, *Energy supplies,
Manufactured gas, Geothermal resources,
Hydroelectric power generation, Electric power
demand, Availability, Demand (Economics) (U)
(U)

This report investigates the availability, cost,
and aggregate demand of energy resources for 1975,
1980, 1985, and 1990. The consumption of energy
resources for 1970 has been included for comparative
purposes. The energy sources examined include:
petroleum, gas, coal, nuclear, hydropower, solar,
geothermal, and electricity. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A008 887

5/2

NOTTINGHAM (H D) AND ASSOCIATES INC MCLEAN VA

Technical Review and Analysis of National
Energy Research and Development Programs and
Proposals (Phase II).

(U)

DESCRIPTIVE NOTE: Final rept. 4 Apr-7 Oct 74,
OCT 74 280P Singh, Tara ; Marks, Alfred
H. ;

CONTRACT: DAAK02-74-C-0214

PROJ: DA-4-A-762719-A-886

TASK: 4-A-762719-A-88606

UNCLASSIFIED REPORT

Availability: Reference only at NTIS. No copies
furnished by DDC.

DESCRIPTORS: *Energy, Nuclear energy, Solar
energy, Energy conversion, Energy conservation,
Energy storage, Shale, Tidal currents,
Transmission lines, Impact, Reviews, Catalogs,
Surveys

(U)

IDENTIFIERS: *Research projects, Geothermal
energy, Shale oil, Tidal power, Environmental
impacts, Energy transmission

(U)

The scope of this investigation included a survey
of the energy research and development programs being
pursued in the United States. Included is a
review and analysis of the recently completed
projects as well as current and future energy R and
D programs. Principal objectives were: to
identify projects or programs having a potential
application to the fixed facilities of the Army; to
assess the state-of-art of the technology; and to
determine the impact of such R and D programs on
the Army's facilities.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A007 892

20/6

11/2

10/2

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

Transparent Heat-Mirror Films of TiO₂/
Ag/TiO₂ for Solar Energy Collection and
Radiation Insulation.

(U)

DESCRIPTIVE NOTE: Journal article,
AUG 74 4P Fan, John C. ; Bachner,
Frank J. ; Foley, George H. ; Zavracky, Paul M.

REPT. NO. JA-4431

CONTRACT: F19628-73-C-0002

PROJ: AF-649L

MONITOR: ESD TR-74-363

UNCLASSIFIED REPORT

Availability: Pub. in Applied Physics Letters,
V25 n12 p693-695, 15 Dec 74.

DESCRIPTORS: *Titanium oxides, *Silver, *Films,
*Mirrors, Visible spectra, Infrared radiation,
Light transmission, Reflectivity, Solar energy,
Fabrication, Reprints

(U)

Transparent heat-mirror films of TiO₂/Ag/
TiO₂ on glass with a visible transmission of
84% (at 0.5 micrometers) and an infrared
reflectivity of 98-99% (at 10 micrometers) have
been fabricated by rf sputtering. Initial tests
indicate that the films are thermally stable in air
at 200 C and inert to water attack. Because of
their excellent optical properties and apparent
stability, these transparent heat-mirror films offer
great promise for use in solar-thermal power
conversion and as transparent thermal insulators.
(Author)

(U)

AD-A008 887

UNCLASSIFIED

PAGE

59

AC-A007 892

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A007 799 10/1 21/4
EDGEWOOD ARSENAL ABERDEEN PROVING GROUND MD

Proceedings of Annual Symposium 'Energy Research and Development' (5th) on 13-14 March 1974, Sponsored by the American Defense Preparedness Association.

(U)

JAN 75 177P Falconer, Donald ;Gerber, Bernard ;Magee, William ;
REPT. NO. ED-SP-74026

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy, *Meetings, Petroleum products, Coal, Thermonuclear energy, Hydrogen, wind, Photosynthesis, Enzyme chemistry, Wastes, Cellulose, Hydrolysis, Solar energy
IDENTIFIERS: Coal gasification, Coal liquefaction, Wind power generation

(U)

(U)

Contents: Energy research and development programs of the United States Department of the Interior; Energy R and D programs of the U.S. Atomic Energy Commission; National Science Foundation energy research and development programs; The energy problem and defense; American Petroleum Institute; Coal research and development; Thermonuclear fusion; Pictorial overview of the hydrogen-energy concept; Review of power from the wind; Bioconversion of solar energy-photosynthesis; Enzymatic hydrolysis of cellulosic wastes; Coal liquefaction and gasification; Beneficial uses of waste heat from steam electric power plants; Energy systems analysis.

(U)

AD-A007 799

UNCLASSIFIED

PAGE

60

AD-A002 576

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A002 576 13/1 10/2
GENERAL ELECTRIC CO PHILADELPHIA PA SPACE DIV

Solar Heating and Cooling of Buildings Study Conducted for Department of the Army. Volume I: Executive Summary and Implementation Plans.

(U)

JUN 74 66P
REPT. NO. 74SD4226-Vol-1
MONITOR: CERL TR-E-65-Vol-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD/A-002 563.

DESCRIPTORS: *Solar heating, *Buildings, Solar collectors, Storage, Site selection, Control systems, Exchange

(U)

IDENTIFIERS: *Solar air conditioning, Heat storage, Fort Belvoir, Fort Huachuca, Implementation testing, Heat exchangers

(U)

Feasibility studies on solar heating and cooling of buildings are summarized. Report covers site and building selection, technology assessment, and implementation plan summaries dealing with the retrofitting of existing buildings.

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A002 563 13/1 10/2
GENERAL ELECTRIC CO PHILADELPHIA PA SPACE DIV

Solar Heating and Cooling of Buildings
Study Conducted for Department of the Army.
Volume II. Technical Report.

(U)

JUN 74 597P
REPT. NO. 74SD4226-Vol-2
MONITOR: CERL TR-E-65-Vol-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD/A-002 576.

DESCRIPTORS: *Solar collectors. *Solar heating. *Buildings. Storage. Exchange. Air conditioning equipment. Pumping. Absorbers (Materials). Insulation. Feasibility studies. Cost estimates. Drawings. Bromides. Buildings. Control systems. Structural properties. Computerized simulation. Site selection. Systems engineering

(U)

IDENTIFIERS: Heat exchangers. Heat storage. *Solar air conditioning. Solar space heating. Heat pumps. Solar energy absorbers. Antireflection coatings. Design. Lithium bromide. Fort Belvoir. Fort Huachuca

(U)

A study of the use of solar energy for the heating and cooling of buildings at Army installations was conducted with two principal objectives: (1) the preliminary design of a solar heating system for retrofitting on an existing building and (2) the evaluation of solar system concepts for the combined heating and cooling of a building in the construction planning phase. A two story administration building at Fort Belvoir, Virginia was selected for the retrofit heating only application and a single story classroom building planned for Fort Huachuca, Arizona was selected for the evaluation of combined solar heating and cooling system concepts. In both applications, the solar energy was absorbed by roof mounted, flat-plate collectors, heating a circulating water flow which was collected in large thermal storage tanks until needed. Assessments were made of the principal technologies associated with solar collectors, thermal energy storage, and cooling by means of solar energy.

(U)

AD-A002 563

UNCLASSIFIED

PAGE

61

AD-A001 253

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A001 253 4/1
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

Parameterization of Solar Absorptivity and Transmissivity Using NIMBUS II Reflectance Data.

(U)

DESCRIPTIVE NOTE: Master's thesis.
SEP 74 64p Healy, Donald Jeremiah ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar radiation. Atmosphere models. Theses. Albedo. Transmissivity. Absorption. United States. Canada. Solar energy. Light transmission

(U)

(U)

IDENTIFIERS: Nimbus 2 satellite. Insolation

In this study, satellite measurements of reflected solar insolation from NIMBUS II were combined with simultaneous pyranometer readings of transmissivity over North America to provide the basis for computation of the atmospheric absorptivity. In the statistical parameterization of the absorptivity, such readily available data as water vapor mass and satellite reflectance were introduced as independent variables in the regression equations. Correlation coefficients between observed regression-determined absorptivities and transmissivities were computed based upon an initial total of 235 data-samples, and the results interpreted.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A001 066 13/1
AIR FORCE MISSILE DEVELOPMENT CENTER HOLLOMAN AFB N
MEX

Notes on Optical Design Principles,
Concentration Ratios, and Maximum
Temperatures of Parabolic Solar
Funnaces.

DESCRIPTIVE NOTE: Technical memo.,
JUL 56 21p Bliss, Raymond W. , Jr;
REPT. NO. MOC-HOW-TM-56-1

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar funnaces, Mirrors, Parabolic
bodies (U)
IDENTIFIERS: Solar energy concentrators,
Design (U)

The memorandum is intended as a preliminary guide
to designers and interested possible users of solar
funnaces. Optical design principles are summarized
briefly, and a simple expression is derived for the
solar concentration ratio obtainable from a perfectly
reflecting paraboloid of large aperture. The
transmission losses necessarily occurring in an actual
funnace are considered and estimated, and estimates
are presented as to the concentration ratios
obtainable with actual solar funnaces of various
apertures. The maximum attainable temperatures of
such funnaces, when operating under favorable
sunshine conditions, is similarly estimated. A
short bibliography is included. (U)

AD-A001 066

UNCLASSIFIED

PAGE

62

AD-A001 063

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A001 063 13/1
AIR FORCE MISSILE DEVELOPMENT CENTER HOLLOMAN AFB N
MEX

Summary of Parabolic Solar Funname
Performance Design. (U)

DESCRIPTIVE NOTE: Technical memo.,
OCT 56 38p Bliss, Raymond W. , Jr;
REPT. NO. MOC-HOW-TM-56-2

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar funnaces, Mirrors, Parabolic
bodies (U)
IDENTIFIERS: Solar energy concentrators,
Design (U)

The memorandum summarizes the basic knowledge
necessary for the design of a solar funname to
specified performance. The intensity of available
southwestern sunshine is estimated from currently
available records. Instruments for measurement of
direct sunshine intensities are described briefly.
The fundamental equations yielding the spot
diameter and concentration ratio of a paraboloid are
given, and the maximum temperatures attainable by
funnaces of given concentration ratios are derived. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A000 941 22/2 10/2 13/11
XEROX CORP/ELECTRO-OPTICAL SYSTEMS PASADENA CALIF

Solar Collector Thermal Power System.
Volume II. Development, Fabrication, and
Testing of Fifteen Foot Heat Pipes.

(U)

DESCRIPTIVE NOTE: Final rept. 16 Aug 71-28 Jun 74,

NOV 74 199P Richter, Robert ;

REPT. NO. 4074-Vol-2

CONTRACT: F33615-72-C-1092

PROJ: AF-3145

TASK: 314519

MONITOR: AFAPL

TR-74-89-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD/A-000 940
and Volume 3, AD/A-000 942.

DESCRIPTORS: *Solar collectors. *Power supplies.

*Spacecraft components. Fabrication.

Sizes(Dimensions). Construction materials.

Insulation. Test equipment. Stress testing

Manufacturing. Instrumentation. Temperature

IDENTIFIERS: BMS satellite, Design, Tests

(U)

(U)

Technical effort in the development of a 15-foot
long primary heat pipe capable of transferring 6 kw
of thermal power and its integration with the
remaining components of a complete thermal system is
presented. The effort comprised the design,
fabrication, and testing of the heat pipe as an
individual component and the integration and testing
with the secondary heat pipe, the thermal energy
storage unit, and a radiation heat transfer joint. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A000 940 22/2 10/2
XEROX CORP/ELECTRO-OPTICAL SYSTEMS PASADENA CALIF

Solar Collector Thermal Power System.
Volume I. Preliminary Technology Systems
Study.

(U)

DESCRIPTIVE NOTE: Final rept. 16 Aug 71-28 Jun 74,

NOV 74 143P Richter, Robert ;

REPT. NO. 4074-Vol-1

CONTRACT: F33615-72-C-1092

PROJ: AF-3145

TASK: 314519

MONITOR: AFAPL

TR-74-89-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD/A-000
941.

DESCRIPTORS: *Solar collectors. *Power supplies.

*Spacecraft components. *Thermoelectricity. Power

equipment. Heat pipes. Energy storage.

Bibliographies. Heat transfer. Space systems.

Deployment. Orientation(Direction).

Construction materials

(U)

(U)

IDENTIFIERS: BMS satellite, Design criteria

Work performed on the Solar Collector Thermal
Power System (SCIPS) program from 16 August
1971 to 28 June 1974 is presented. Volume 1
contains the system analysis for a solar collector
thermal power system supplying thermal energy to a
Vulcanizer cooler that is carried on a BMS type
satellite. The analysis covers specific
requirements of individual components of the power
system, including the solar collector, heat pipes,
and the thermal energy storage system. An extensive
bibliography of pertinent heat transfer, solar
collectors, and space power system reports is a part
of this volume. (U)

AD-A000 941

UNCLASSIFIED

PAGE

63

AD-A000 940

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 879 939 10-2 13/1 22/2
HONEYWELL INC MINNEAPOLIS MINN SYSTEMS AND RESEARCH
DIV

Solar Heat Source Feasibility Study. (U)

DESCRIPTIVE NOTE: Final technical rept. 1 Oct 69-15
Aug 72.

JAN 71 1862 Ramsey, James W. ; Petersen,
Carl B. ; Schmidt, Roger N. ;

REPT. NO. 1200-FR

CONTRACT: F33615-70-C-1093

PROJ: AF-ADP84A

MONITOR: AFML TR-70-294

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOLAR COLLECTORS, FEASIBILITY STUDIES),
(*POWER SUPPLIES, THERMAL UTILIZATION), (*SCIENTIFIC
SATELLITES, REFRIGERATION SYSTEMS), SOLAR RADIATION,
COLLECTING METHODS, MIRRORS, FOCUSING, HEAT EXCHANGERS,
DESIGN, OPTIMIZATION, (U)
IDENTIFIERS: *CRYOGENIC REFRIGERATORS, HEAT PIPES, (U)
*SOLAR HEAT SOURCES (U)

The goal of this study is to demonstrate the feasibility of direct conversion of solar energy to heat to provide a lightweight, inexpensive power source for orbital cryo-cooling. This was accomplished by design of a solar heat source for satellite use, optimizing the design for 1250 degrees F, and verifying the design with tests of a scale model. The design and optimization were done by conducting a series of tradeoff studies on the various components. The resulting design is predicted to have an efficiency in excess of 50 percent, at a cost and weight far less than that of competing solar cell powered heaters. It is also much less expensive than nuclear sources of heat. The design provides for sun tracking in any orbit with heat storage provisions for shadow transit. The design includes a parabolic collector, a spherical receiver with a selective solar energy absorbing coating, potassium or sodium-filled molycorp heat pipe, lithium fluoride as the heat storage material, and sunpointing handled with stratosphere and state-of-the-art techniques. The verification of system feasibility was by fabrication and testing of a test model.

(U)

AD- 879 939

UNCLASSIFIED

PAGE

65

AD- 839 951

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 839 951 13/1 20/13
AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB
OHIO

DETERMINATION OF CAUSE OF PRESSURE SURGE ASSOCIATED
WITH LITHIUM-FLUORIDE STEAM HEAT RECEIVER. (U)

DESCRIPTIVE NOTE: Technical rept. Nov 65-Sep 66.

JUN 68 872 Hopkins, Kenneth N. ;

REPT. NO. AFAPL-TR-68-36

PROJ: AF-3145

TASK: 314501

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOLAR FURNACES, BOILERS), (*BOILERS,
*THERMAL STABILITY), LITHIUM FLUORIDES, RANKINE CYCLE,
PRESSURE, SPIKES, STABILIZATION, HEAT TRANSFER, BOILING, (U)
STABILITY, TEST METHODS (U)
IDENTIFIERS: *FAULT ANALYSIS, PRESSURE SURGE, (U)
RECUPERATORS, SOLAR BOILERS (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 820 856

10/2

AEROSPACE CORP EL SEGUNDO CALIF LABS DIV

AN EVALUATION AND COMPARISON OF POWER SYSTEMS FOR
LONG-DURATION, MANNED SPACE VEHICLES. (U)

DESCRIPTIVE NOTE: Rept. for Jan-Aug 65,

MAY 67 49p

Harrison J. ; Knisillas, John G. ; Killian,

REPT. NO. TR-1001(2730-01)-2

CONTRACT: AF 04(695)-1001

MONITOR: SSD TR-67-132

UNCLASSIFIED REPORT

DESCRIPTORS: (*POWER EQUIPMENT, MANNED SPACECRAFT),
MILITARY OPERATIONS, FUEL CELLS, SOLAR CELLS, SOLAR
RADIATION, NUCLEAR POWER PLANTS, RADIOACTIVE ISOTOPES,
WEIGHT, NUCLEAR REACTORS, COSTS,
RELIABILITY(ELECTRONICS), PHOTOELECTRIC
CELLS(SEMICONDUCTOR) (U)

This report presents the results of an analysis to evaluate and compare the application of space power systems to long-duration, manned space vehicles. From 2 to 10 kilowatts of average power is the range of interest for future manned military spacecraft. Such spacecraft will operate also at orbital altitudes below 200 n mi and may have orbital lifetimes of up to five yr. Six types of power systems (fuel cell, solar-photovoltaic, solar-dynamic, radioisotope-thermoelectric, radioisotope-dynamic, and nuclear reactor/dynamic) were evaluated for possible application to such missions. Evaluation and comparison criteria for a typical space mission included weight, development costs, operational costs, potential reliability, and spacecraft integration factors. It was concluded from this study that radioisotope-dynamic power systems are best for the range of applications being considered in this report. Radioisotope-thermoelectric systems have a high inherent reliability, but are heavier than radioisotope-dynamic systems. Fuel cell systems are too heavy and incurred excessive cost for resupply for long-duration missions. Solar-powered systems are not competitive because of excessive weight and difficult integration problems. Nuclear reactor systems are not competitive because of excessive weight, high costs, and poor mission integration characteristics. (U)

AD- 820 856

UNCLASSIFIED

PAGE

66

AD- 816 040

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 816 040

10/2

9/1

LOCKHEED MISSILES AND SPACE CO SUNNYVALE CALIF

SPACE LINKAGE SYSTEM. ANALYTICAL STUDY AND
PRELIMINARY DESIGN. VOLUME II. APPENDIXES. (U)

DESCRIPTIVE NOTE: Final rept. 1 Mar 66-1 Apr 67,

APR 67 135P

U. ; Helm, J. R. ; Woldow, A. F. ; Dotson, R.

D. ;

REPT. NO. LMSC-A858074-Vol-2

CONTRACT: AF 33(615)-3709

PROJ: AF-3145

TASK: 314502

MONITOR: AFAPL TR-67-53-Vol-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-816 039.
DESCRIPTORS: (*POWER SUPPLIES, SPACEBORNE),
(*TRANSMISSION LINES, RENDEZVOUS SPACECRAFT), ELECTRIC
POWER PRODUCTION, SOLAR CELLS, ENERGY CONVERSION,
ELECTRIC CONNECTORS, BOOMS(EQUIPMENT), DIGITAL
COMPUTERS, SIMULATION, SUBROUTINES, EQUATIONS OF MOTION,
MATHEMATICAL ANALYSIS, TORQUE, STRUCTURAL PROPERTIES,
TORSION, THERMAL STRESSES, BUCKLING, STRESSES, THERMAL
ANALYSIS, ELECTRIC CABLES, SLIP RINGS (U)
IDENTIFIERS: ASTEROL-ADVANCED SOLAR TURBO ELECTRIC
CONCEPT, STATION KEEPING (U)

Electrical power may be generated in space by heliotropically oriented static or dynamic energy conversion devices. Such devices, however, must be capable of being attached to an earth-orbiting mission vehicle. To provide maximum utility, the resulting two-body system must be capable of operation at any orbital inclination angle. The physical connection of two bodies in space, which precludes allowing or utilization of the two bodies, imposes a widely spaced, linked-together, two-body space system. The severe control dynamics problem associated with such a system must be investigated and solved. The objective of this study, as to analytically determine the problems associated with a space linkage used to tether a sun-oriented space power system to an earth-oriented mission vehicle and to provide a preliminary design of a feasible space linkage system consistent with the established analytical results and criteria. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 816 039 10/2 9/1
LOCKHEED MISSILES AND SPACE CO SUNNYVALE CALIF

SOLAR LINKAGE SYSTEM, ANALYTICAL STUDY AND
PRELIMINARY DESIGN, VOLUME I.

DESCRIPTIVE NOTE: Final rept. 1 Mar 66-1 Apr 67,
APR 67 104P Weiten, E. F.; Daughton, A.
J.; Heim, J. R.; Woldow, A. F.; Dotson, R.
D.;

REPT. NO. LMSC-A858074-Vol-1
CONTRACT: AF 33(615)-3709
PROJ: AF-3145
TASK: 314502
MONITOR: AFAPL TR-67-53-Vol-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-816 040.
DESCRIPTORS: (*POWER SUPPLIES, SPACEBORNE),
(*TRANSMISSION LINES, *RENDEZVOUS SPACECRAFT), ELECTRIC

CABLES, ELECTRIC CONNECTORS, SOLAR CELLS, ELECTRIC POWER
PRODUCTION, ENERGY CONVERSION, DESIGN, BOOMS(EQUIPMENT),
CONFIGURATION, AERODYNAMIC LOADING, DRAG, ANGLE OF
ATTACK, DEPLOYMENT, STRUCTURAL PROPERTIES, SLIP RINGS,
LOADS(FORCES), THERMAL ANALYSIS, WEIGHT, ATTITUDE
CONTROL SYSTEMS, TORQUE
IDENTIFIERS: ASTECI, ADVANCED SOLAR TURBO ELECTRIC
CONCEPT, STATION KEEPING

The objective of this study was to analytically determine the problems associated with a space linkage used to tether a sun-oriented space power system to an earth-oriented mission vehicle and to provide a preliminary design of a feasible space linkage system consistent with the established analytical results and criteria. A computer program was developed in which the appropriate parameter variations of control system design of the two vehicles were analyzed. Families of possible space linkages were established from which the final space linkage configuration evolved. This configuration utilizes either a Ryan type deployable boom or a folding type of linkage. Assuming a five-minute extension time for the space linkage, a loads and dynamics response analysis was accomplished which established the loads for the space linkage preliminary design. It is concluded that a linkage providing four degrees of freedom at appropriate locations will meet the mission

AD- 816 039

UNCLASSIFIED

PAGE

67

AD- 813 123

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 813 123 10/2 11/7
LOCKHEED MISSILES AND SPACE CO SUNNYVALE CALIF

PROGRAM ROE (REFLECTOR ORBITAL EXPERIMENT). PART V.
INVESTIGATION OF TEST PROGRAMS FOR SOLAR COLLECTOR
MATERIALS.

DESCRIPTIVE NOTE: Technical rept. Oct 63-Aug 64.

DEC 64 335P
REPT. NO. LMSC-A730140
CONTRACT: AF 33(657)-10868
PROJ: AF-3145
TASK: 314502
MONITOR: AFAPL TR-64-132-Pt-5

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Part 4, AD-458 241.
DESCRIPTORS: (*REFLECTORS, POWER SUPPLIES), (*SOLAR
COLLECTORS, ELECTRIC POWER PRODUCTION), FEASIBILITY
STUDIES, ORBITS, SPACE ENVIRONMENTS, SOLAR RADIATION,
COSMIC RAYS, AURORAE, SOLAR FLARES, PROTONS, VACUUM,
SCIENTIFIC SATELLITES, ENVIRONMENTAL TESTS, PAYLOAD,
THERMAL RADIATION, ATTITUDE CONTROL SYSTEMS, SOLAR
PANELS, GEOMAGNETISM, MATERIALS, ENERGY CONVERSION
IDENTIFIERS: AGENA, FOGO, REFLECTOR MATERIALS, ROE
PROGRAM

The ROE 1 task was preliminary design of an orbital vehicle and system for simultaneously testing in space two types of reduced-scale (10-ft-diameter) solar reflectors. Subsequently, the nature of this task was changed to ROE 11 1C, a group of heterogeneous studies pertaining to the design and orbital testing of a full-scale (45- to 60-ft-diameter) solar reflector for a solar-dynamic power system. The tasks pertaining to the materials required for the solar reflector are described in this volume. Initial laboratory evaluations and unsophisticated flight tests employing recoverable payloads were planned and conducted. At the same time, detailed analyses were made of the requirements for the ground laboratory and on-orbit flight tests to develop and qualify materials for the full-scale reflector.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 804 111 22/2
ELECTRO-OPTICAL SYSTEMS INC PASADENA CALIF

FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/
LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER.
VOLUME III. SPACECRAFT DESIGN. (U)

DESCRIPTIVE NOTE: Final technical rept. Mar-Sep 65,
DEC 66 232P Toms, R. S. ; Waddell, R.

L. ; Fine, S. B. ;
REPT. NO. EDS-4816-F-Vol-3
CONTRACT: AF 33(615)-1530
MONITOR: AFAPL TR-66-109-Vol-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-804 109, and
Volume 2, AD-804 110.
DESCRIPTORS: (*MARS PROBES, DESIGN). (*ASTRONAUTICS,
MARS PROBES). LAUNCH VEHICLES. ION ENGINES. POWER
SUPPLIES. SOLAR CELLS. ATTITUDE CONTROL SYSTEMS.
TELEMETRY SYSTEMS. PAYLOAD, MONITORS, MISSION PROFILES,
SYSTEMS ENGINEERING. SPACECRAFT COMPONENTS (U)
IDENTIFIERS: VOYAGER (U)

Volume III describes the craft design and its
interfaces with the launch vehicle and lander.
Selection and analysis of subsystems include the
structure, power, attitude control,
telecommunications, and scientific payload. System
integration discussion includes mass distribution,
thermal analysis, mechanisms, deployment, mission
profile and system operation. The conceptual
design and weight summary for a baseline craft are
given, together with comparison with the basic
Voyager design. (U)

AD- 804 111

UNCLASSIFIED

PAGE

68

AD- 804 110

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 804 110 21/3 22/1 22/3
ELECTRO-OPTICAL SYSTEMS INC PASADENA CALIF

FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/
LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER.
VOLUME II. MISSION ANALYSIS. (U)

DESCRIPTIVE NOTE: Final technical rept. Mar-Sep 65,
DEC 66 153P Toms, R. S. H. ; Waddell,

R. L. ; Fine, S. B. ;
REPT. NO. EDS-4816-Vol-2
CONTRACT: AF 33(615)-1530
MONITOR: AFAPL TR-66-109-Vol-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-804 109, and
Volume 3, AD-804 111.
DESCRIPTORS: (*ION ENGINES, *MARS PROBES). (*ELECTRIC
PROPULSION, MARS PROBES). (*ASTRONAUTICS, MARS PROBES).
(*SPACE PROPULSION, ION ENGINES). MISSION PROFILES.
LAUNCHING, TRAJECTORIES, CURVE FITTING, COMPUTER
PROGRAMS. SPACECRAFT COMPONENTS. SOLAR CELLS. SOLAR
RADIATION, ENERGY CONVERSION, ELECTRIC POWER PRODUCTION,
CESIUM, LIQUID ROCKET PROPELLANTS, EFFECTIVENESS (U)
IDENTIFIERS: VOYAGER (U)

Volume II describes mission analysis and
propulsion system design, together with its
development to a fixed thrust line, boost-coast
trajectory employing a near-rendezvous approach.
Launch window, thrust direction, specific impulse
and other tradeoffs are given. Characteristics of
contact and bombardment engines and the associated
power conditioning and control systems and feed
systems are given with detailed design considerations
to meet specific requirements. Ion engine
development status as of May 1966 is
summarized. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 804 109 21/3 22/2
ELECTRO-OPTICAL SYSTEMS INC PASADENA CALIF

FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/
LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER.
VOLUME I. SUMMARY. (U)

DESCRIPTIVE NOTE: Final technical rept., Mar-Sep 65,
DEC 66 87P Toms, R. S. H. Waddell,
R. L. Fine, S. B. ;
REPT. NO. EOS-4816-F-Vol-1
CONTRACT: AF 33(615)-1530
MONITOR: AFAPL TR-66-109-Vol-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-804 110, and
Volume 3, AD-804 111.

DESCRIPTORS: (*ION ENGINES, *SOLAR CELLS), (*MARS
PROBES, FEASIBILITY STUDIES), SOLAR PANELS, ORBITS,
LAUNCH VEHICLES, RENDEZVOUS SPACECRAFT, CESIUM, ION
BOMBARDMENT, SPACE PROBES, ELECTROOPTICS (U)
IDENTIFIERS: ARRAYS, SOLAR CELLS (U)

Volume I describes a solar-electric propelled
spacecraft using ion engines and photovoltaic power
to effect the heliocentric transfer from Earth to
Mars, carrying a lander and orbiter to perform a
Voyager-type mission. The mission feasibility is
described in terms of trajectory analysis, launch
requirements and parametric trade-offs, resulting in
substantial gains for electric propulsion compared
with conventional chemical propulsion. Feasibility
of the ion propulsion system is described with
summaries of supporting programs on feed systems,
neutralizers, power conditioning, and thruster system
life tests. Spacecraft feasibility is described in
terms of subsystem integration, launch vehicle
compatibility, deployment, and system operation.
Volume II describes mission analysis and
propulsion system design, together with its
development to a fixed thrust line, boost-clast
trajectory employing a non-rendezvous approach.
Volume III describes the craft design and its
interfaces with the launch vehicle and lander.
Selection and analysis of subsystems includes the
structure, power, attitude control,
telecommunications, and scientific payload. System
integration discussion includes mass distribution,
thermal analysis, mechanisms, deployment. (U)

AD- 804 109

UNCLASSIFIED

PAGE

69

AD- 786 935

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 786 935 10/2 13/10
REED RESEARCH INC WASHINGTON D C

Study of Solar-Energy Use in Marine
Navigation Aids. (U)

DESCRIPTIVE NOTE: Final rept.
OCT 62 127P
CONTRACT: Tcg-42045
PROD: RR-1750

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: *Solar cells, *Navigational aids,
*Marine transportation, Solar radiation,
Thermocouples, Converters, Storage batteries,
Reviews, Battery components, Costs, Fermi
surfaces, Reliability, Electronics) (U)
IDENTIFIERS: *Photogalvanic cells, *Photovoltaic
cells, Solar insolation, *Semiconductor
junctions (U)

The report describes qualitatively three types of
solar converters: thermocouple, photogalvanic cell
and barrier layer photovoltaic cells. The
performance characteristics of the photovoltaic
converter when used to convert solar radiation
directly to electrical energy, the theory of p-n
junction, and different types of solar cells are
described in detail. Empirical and analytical
relationships are derived which present expected
efficiencies of conversion as a function of
temperature, solar insolation, and other factors. A
discussion is also included describing the state-of-
the-art and practical and theoretical limitations of
a solar battery system. (Modified author
abstract) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 786 844 10/1
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE
VA

Wind and Solar Power Engineering.

(U)

APR 74 11P Konovalev, B. ;
REPT. NO. FSTC-HT-23-0402-74

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. from Izvestiya (USSR) v273
p2, 21 Nov 72.

DESCRIPTORS: *Wind machines, *Solar heating,
Translations, USSR

(U)

IDENTIFIERS: *Solar power generation, *Wind
power

(U)

The need for small wind and solar powered
installations for use at small settlements and
installations is briefly discussed.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 786 757 10/1 10/2
BOOZ-ALLEN AND HAMILTON INC BETHESDA MD

Alternative Strategies for Optimizing Energy
Supply, Distribution, and Consumption Systems
on Naval Bases. Volume II. Advanced
Energy Conservation Strategies.

(U)

DESCRIPTIVE NOTE: Final rept. Nov 73-Jan 74,
JAN 74 231P Conner, T. ; Nicholas, J. ;
Nichols, J. ; Mulfinghoff, D. ; Mateyka, J. ;
CONTRACT: N62399-73-C-0029
MONITOR: CEL CR-74-007

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-777 471.

DESCRIPTORS: *Energy management, *Naval shore
facilities, solar heating, Fuel cells,
Transportation, Heat engines, Technology, Cost
effectiveness, Energy conservation, Cost analysis,
Benefits, Thermionic converters, Solar collectors
IDENTIFIERS: Cost benefit analysis, Electric power
generation, Wind power, Solar air conditioning,
Photovoltaic cells

(U)

(U)

The report describes five advanced strategies for
optimizing energy supply, distribution, and
consumption systems on naval bases: (1)
Solar energy applications; (2) automated
building control and monitoring systems; (3)
electrochemical sources--fuel cells; (4) advanced
transportation technology; and (5) total energy
systems. For each advanced strategy, the report
contains a technology assessment, a discussion of
applicability to the Navy, a discussion of costs
and benefits, and recommendations for Navy
implementation. (Modified author abstract)

(U)

AD- 786 844

UNCLASSIFIED

PAGE

70

AD- 786 757

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 786 384 10/2 17/7
 COAST GUARD BALTIMORE MD FIELD TESTING AND DEVELOPMENT
 CENTER

Hoffman HSPP-1 Solar Converter, (U)

SEP 68 17P Witter, R. W. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar generators, *Navigational
 lights, Solar cells, (U)

IDENTIFIERS: Solar panels, Solar cell arrays (U)

This report describes an application of the Hoffman HSPP-1 Solar Converter as a potential power source for minor aids to navigation. This project and report's purpose is to study solar cells as a potential source for minor lights, and to define conditions under which the use of solar cells in aids to navigation would be economical. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 785 608 20/12
 HARRY DIAMOND LABS WASHINGTON D C

Large Polarization Dependent Voltages in
 Ferroelectric Ceramics. (U)

Frank ; 73 12P Brody, Philip S. ; Crowne,

UNCLASSIFIED REPORT

DESCRIPTORS: *Ferroelectric materials, *Photovoltaic
 effect, High voltage, Polarization, Solar energy,
 Ceramic materials (U)

This paper describes a new high-voltage photovoltaic effect appearing in ferroelectric ceramics. A thin ceramic wafer illuminated uniformly produces a steady voltage across electrodes on the wafer edge. This is a new effect with possible applications. This effect could be used to produce very high voltages in a relatively uncomplicated fashion. Of greater importance, perhaps, is a possible potential for direct solar-to-electric energy conversion, although this would necessitate finding a material with considerably greater photovoltaic efficiencies over broader spectral regions. (U)

AD- 786 384

UNCLASSIFIED

PAGE

71

AD- 785 608

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMD9

AD- 784 708

10/1

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

Development of Solar Engineering in the USSR,

(U)

JUL 74 15P Arifov, U. A. ;
REPT. NO. FTD-HT-23-792-74

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Geliotekhnika (USSR) n6 p3-8 1972, by Dean F.W. Koolbeck.
 DESCRIPTORS: *Solar energy, Engineering, Utilization, Reviews, Solar generators, Solar heating, Solar furnaces, Translations, USSR

Development of Solar Engineering in the USSR--
 Translation.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMD9

AD- 784 520

3/2

AIR FORCE CAMBRIDGE RESEARCH LABS L G HANSCOM FIELD
MASSInterplanetary Particle Fluxes Observed by
OV5-6 Satellite.

(U)

DESCRIPTIVE NOTE: Scientific interim rept.,
 74 BP Yates, G. Kenneth ; Katz,
 Ludwig ; Sellers, Bach ; Hansen, Frederick A. ;
 REPT. NO. AFRL-TR-74-C362
 PROJ: AF-8600
 TASK: 860007

UNCLASSIFIED REPORT

Availability: Pub. in Jnl. of Correlated
 Interplanetary and Magnetospheric Observations, p597-
 602 1974.

SUPPLEMENTARY NOTE:

DESCRIPTORS: *Solar cosmic rays, Particle flux,
 Particle spectra, Protons, Alpha particles,
 Alpha particle detectors, Channels, Sunspots
 IDENTIFIERS: *Solar protons, OV5-6 satellite,
 Solar energy

(U)

(U)

The OV5-6 (1969-0455) satellite launched 23
 May 1969 and with 2.9 R sub E perigee, 19.3 R
 sub E apogee and 30.6 degrees inclination, has
 observed numerous solar events since its launch.
 The proton-alpha telescope aboard this satellite is
 capable of measuring protons in 8 energy bins between
 1 and 100 Mev and alphas in 3 energy bins between
 20-100 Mev. Time histories of fluxes of
 various channels and energy spectra are presented for
 the August 2-15, 1972 series of events. This
 multiple event included a more than 10.0% factor
 increase in the proton and alpha particle fluxes.

(U)

AD- 784 708

UNCLASSIFIED

PAGE

72

AD- 784 520

UNCLASSIFIED

ZOMD9

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 782 041 10/2

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTEVILLE VA

Electric Circuit Calculations for Multistage Solar Thermoelectric Generators.

(U)

APR 74 9P Arazmedov, B. ; Agabaev, Ch. ;
Malevskii, Yu. N. ; Berd'ev, B. M. ; Annaev, O.

REPT. NO. FSTC-WT-23-1591-73

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. of Geliotekhnika (USSR) n2
p13-16 1972.

DESCRIPTORS: *Solar generators, *Thermoelectric
power generation, Circuits, Computations,
Translations, USSR

(U)

A method of calculating the electric circuit of a
multistage solar thermoelectric generator is
described for the case when all thermopile-stage
functions are in appropriate working conditions and
are series-connected into the external load
circuit.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 781 817 10/1

STANFORD RESEARCH INST MENLO PARK CALIF

Assessment of Total Energy Systems for the
Department of Defense. Volume 2.
Appendices.

(U)

DESCRIPTIVE NOTE: Final rept.,
NOV 73 160P Goen, Richard L. ; Stout,
Gordon ; Beaulaurier, L. O. ; Schmidt, Richard A.
; Ryan, John W. ;

REPT. NO. SRI-EGU-2513-Vol-2

CONTRACT: DACA23-73-C-0014, ARPA Order-2408

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-781 E16.
DESCRIPTORS: *Energy, Military facilities, Fuels,
Nuclear energy, Nuclear power plants, Geothermal,
Fuel consumption, Diesel engines, Electric
generators, Solar energy, Gas turbines, Steam
turbines, Solid wastes, Costs, Computer
programs

(U)

IDENTIFIERS: *Total energy systems, Fossil
fuels

(U)

The purpose of the study is to assess the potential
applicability of various types of total energy
systems to military installations. The appendix
volume of the final report contains (1)
engineering performance characteristics and costs of
fossil fuel system elements, (2) energy
consumption data for military bases and derivation of
the energy load profiles used in the study, (3)
description of the fuel consumption model and
summaries of the fuel consumption and total system
costs for the various cases, (4) characteristics
and costs of geothermal systems, and (5)
description of solar energy systems.
(Author)

(U)

AD- 782 041

UNCLASSIFIED

PAGE

73

AD- 781 817

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 781 816 10/1
STANFORD RESEARCH INST MENLO PARK CALIF

Assessment of Total Energy Systems for the
Department of Defense - Volume 1.

DESCRIPTIVE NOTE: Final rept.,
NOV 73 122P
REPT. NO. SRI-EGU-2513-Vol-1
CONTRACT: DACA23-73-C-0014, ARPA Order-2408

UNCLASSIFIED REPORT

SUPPLEMENTAR NOTE: See also Volume 2, AD-781 817.
DESCRIPTORS: *Energy, Military facilities, Fuels,
Solar energy, Nuclear energy, Nuclear power
plants, Geothermy, Diesel engines, Electric
generators, Gas turbines, Steam turbines, Solid
wastes, Costs, Fuel consumption
IDENTIFIERS: *Total energy systems, Fossil
fuels (U)
(U)

The purpose of the study is to assess the potential
applicability of various types of total energy
systems to military installations. The types of
energy systems considered include diesel, gas
turbine, steam turbine, geothermal, solar, nuclear,
and solid wastes. Fuel savings are given for each
type of system, and their costs are compared with the
costs of conventional systems. The two most
promising systems are (1) solar energy applied to
heating and cooling, and (2) nuclear power.
(Author) (U)

AD- 781 816

UNCLASSIFIED

PAGE

74

AD- 779 877

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 779 877 10/1
NAVAL RESEARCH LAB WASHINGTON D C

Energy from the Ocean: An Appraisal.

DESCRIPTIVE NOTE: Memorandum rept.,
MAY 74 47P Griffin, Owen M. ;
REPT. NO. NRL-MR-2803
PROJ: NRL-F02-24, RR131-03
TASK: RR131-03-41

UNCLASSIFIED REPORT

DESCRIPTORS: *Energy, Oceans, Solar energy,
Tides, Gradients, Heat, Wind, Power,
Feasibility studies, Electric power plants (U)

The oceans and their environment have long been
envisioned as renewable sources of energy. It is
the purpose of this report to assess the feasibility
of drawing on the sea for power and to determine the
extent to which the oceans are likely to serve future
energy needs. A review is made of proposed
U.S. funding levels for the research and
development of renewable energy sources during the
years 1975 - 1979, and a study is made of the
technical and environmental acceptability status of
tidal, wind, and sea thermal power generation
systems. The estimated costs of these environmental
power sources are compared with the prevailing power
costs for nuclear and coal plants. On the basis of
these comparisons, recommendations are made for a
program of research and development, culminating in
the construction of prototype plants, for wind and
sea thermal power plants. Tidal power generation
is found to be technically feasible but economically
uninviting at present. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 778 846 10/1

INFORMATICS INC ROCKVILLE MD

Solar Energy.

(U)

MAR 74 478P Stevovich, Vlastimir A. ;

CONTRACT: F44620-72-C-0053, ARPA Order-1622-4

MONITOR: AFOSR TR-74-0600

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar energy, Energy conversion, Power, Energy, Energy storage, Collection, Solar heating, Utilization, USSR, Power supplies, Reviews

(U)

The report is a comprehensive review of present major developments and future planning in various fields of applied solar engineering. The study covers theoretical and experimental data on the background and state-of-the-art of applied solar research in general, with emphasis on foreign work, particularly in the Soviet Union.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 777 737 10/2

MICHIGAN UNIV ANN ARBOR DEPT OF MATERIALS AND METALLURGICAL ENGINEERING

Preliminary Reports, Memoranda and Technical Notes of the Materials Research Council Summer Conference Held at La Jolla, California, July, 1973, Volume II. Proceedings of the Discussion Group on Solar Energy Conversion.

(U)

JUL 73 307P Hucker, Edward E. ;

CONTRACT: DANC15-71-C-0253, ARPA Order-2341

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume I, AD-777 743. DESCRIPTORS: *Energy conversion, *Solar energy, *Meetings, Photovoltaic effect, Energy, Thermal radiation, Gradients, Thermal power plants, Energy storage, Fuel cells, Hydrogen, Heat

(U)

Discusses applications of solar energy, concentration and collection of solar energy, photovoltaic conversion, ocean thermal gradients, energy storage, and fuel cells.

(U)

AD- 778 846

UNCLASSIFIED

PAGE

75

AD- 777 737

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 772 451 10/2
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTEVILLE
VA

The Heliodevice (Gelioustanovka),

(U)

JUN 73 4P Kharazyan, G. A. ;
REPT. NO. FSTC-HT-23-1209-72

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. of unidentified Russian
language patent, pub. by Committee for the Matters of
Inventions and Discoveries, Moscow, 17 Jul 70.
DESCRIPTORS: *Solar generators. Solar collectors,
Solar radiation, Tracking, Patents,
Translations, USSR

(U)

The patent describes an installation used in
producing energy from the sun. It has an
elliptical form and is provided with a mechanical
rotation of the optical center, connecting the center
of heliostat with the center of concentrator. The
blinds of the regulator are mounted on the heliostat
parallel to the large center line of the ellipse. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 771 302 11/9 10/3 20/12
MICHIGAN UNIV ANN ARBOR DEPT OF MATERIALS AND
METALLURGICAL ENGINEERING

Report of the Materials Research Council
(1973),

(U)

DEC 73 108P Huckle, Edward E. ;
CONTRACT: DAHCl5-71-C-0253, ARPA Order-2341

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Dec 72, AD-
755 585.

DESCRIPTORS: *Materials, Organic materials,
Scientific research, Abstracts, Polymers,
Superconductors, Energy storage, Crystals,
Brittleness, Inorganic materials, High
temperature, Ductility, Solar energy, Stress,
Corrosion, Physical properties, Mechanical
properties

(U)

(U)

IDENTIFIERS: Amorphous materials

The report provides a summary of the activities and
output of the Materials Research Council for
the year ending December, 1973. Research topics
include superconductors, crystals, mechanical
properties of materials, energy transfer, solar
energy, high temperature research, and other
areas. (U)

(U)

AD- 772 451

UNCLASSIFIED

PAGE

76

AD- 771 302

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 770 319 4.1 AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONS

Solar Electron Access to the Magnetosphere, (U)

AUG 73 41P Kampola, Alfred L. :
REPT. NO. TR-0074(4260-20)-5
CONTRACT: F04701-73-C-0074
MONITOR: SAMSO TR-73-347

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar flares, *Solar radiation, (U)
*Magnetosphere, Solar energy, Electrons (U)
IDENTIFIERS: *Solar electrons

The problem of solar flare electron access to the geomagnetosphere is reviewed. The lack of a definitive solution to this problem is found to be due to the inadequacy of the measurements that have been published to date rather than to the nature of the problem. The data that have been published support the interconnection model of the magnetosphere. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 765 715 5/14 3/2 4/1 AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONS

Experimental Evidence for the Connection between the Geomagnetic and the Interplanetary Fields as Determined from Observations of Energetic Solar Particles. (U)

SEP 73 49P Paulikas, George A. :
REPT. NO. TR-0074(4260-011)-1
CONTRACT: F04701-73-C-0074
MONITOR: SAMSO TR-73-257

UNCLASSIFIED REPORT

DESCRIPTORS: *Geomagnetism, Magnetic fields, (*SPACE ENVIRONMENTS, Magnetic fields), CORRELATION TECHNIQUES, (U)
SOLAR RADIATION, ELECTRONS, PROTONS, AURORAE, POLAR REGIONS, MAGNETOSPHERE (U)
IDENTIFIERS: POLAR CAP ABSORPTION, ELECTRONS, SOLAR ENERGY, SOLAR PROTONS (U)

Recent measurements of energetic solar particles have shown that a direct connection exists between the geomagnetic field and the interplanetary magnetic field. The access window for 300 keV solar protons that reach the center of the polar cap may be as near as 150 R(1) in the downstream magnetotail; access windows of solar protons, which precipitate into the atmosphere at latitudes near the geomagnetic cutoff, may be as near as 30 R(1). Comparison of the patterns of auroral particle precipitation with the zones of access of energetic solar electrons and protons indicates that a substantial fraction of the aurora originates on field lines connected to the interplanetary field. (U)

AD- 770 319

UNCLASSIFIED

PAGE

77

AD- 766 715

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 762 848

3 2

IOWA UNIV IOWA CITY DEPT OF PHYSICS AND ASTRONOMY

Characteristics of Electron and High-Energy
Proton Flares.

(U)

SEP 72 14P Sarris,Emmanuel T.;Shawhan,
Stanley D.;

CONTRACT: N00014-68-A-0195-0003, NGL-16-001-002

UNCLASSIFIED REPORT

Availability: Pub. in Solar Physics, v28 p519-
532 1973.SUPPLEMENTARY NOTE: Revision of report dated 23 May
72.DESCRIPTORS: (SOLAR FLARES, CHARGED PARTICLES),
SCIENTIFIC SATELLITES, ELECTRONS, PROTONS, ALPHA
PARTICLES, X RAYS

(U)

IDENTIFIERS: ELECTRONS, SOLAR ENERGY, SOLAR PROTONS,
SOLAR X RAYS, EXPLORER 35 SATELLITE, EXPLORER 33
SATELLITE

(U)

High energy, proton (EHP) ~ 55 MeV) and
electron (ELE) > 50 keV events were observed
by University of Iowa experiment on the
satellites Explorer 33 and 35. The solar X-ray
(2-12A) flares associated with the energetic
proton events were found to have in general higher
peak fluxes, considerably longer decay times (delta
t) and smaller rise to decay (rise ratios) in
than the X-ray flares associated with the electron
events. The most common decay times and rise to
decay, time ratios are: $60 < \delta t < 100$
min, $0.1 < \delta t / \delta t_{\text{on}} < 0.2$ for the proton X-
ray flares and $\delta t < \delta t_{\text{on}} = 20$ min, $0.3 < \delta t / \delta t_{\text{on}} = 0.7$ for the electron ones. (Author)

(U)

AD- 762 848

UNCLASSIFIED

PAGE

79

AD- 762 803

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 762 803

4/2

1/3

METEOROLOGICAL RESEARCH INC ALTADENA CALIF

Project AS-20: An Investigation of the Use
of Solar Heating to Improve the Performance
of Polyurethane Balloons.

(U)

DESCRIPTIVE NOTE: Final report.

MAY 73 132P Star,Paul;Simpson,A. D.;

CONTRACT: N00014-71-C-0356

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with Sea
Star, Paul;Simpson,A. D.;

DESCRIPTORS: (METEOROLOGICAL BALLOONS, ISOCYANATE
PLASTICS), FILMS, BALLOONS, FLIGHT PATHS, RECRYSTALLI-
ZATION, RUBBER, ELONGATION, SOLAR RADIATION, HIGH ALTITUDE, LOW
TEMPERATURE

(U)

(U)

IDENTIFIERS: SOLAR HEATING

The report presents investigations relative to the
use of polyurethane film for fabrication of
expandable envelopes to achieve very high altitude
balloon flights; the altitude goal is 180,000 feet.
Evaluation was made of the exponential-hyperbolic
elasticity parameters for dental dam rubber and
preliminary estimates as to the physical limitations
of polyurethane film relative to its ductility and
capacity were made. A preliminary evaluation by
mock-up was made as to the temperature elevation to
be expected in pertinent parts of a tinted balloon
envelope as it is held in the launch arm during the
inflation process. Balloon flight profiles with
superpressure initiation at 90,000 feet were also
analysed showing the relative performance of tinted
versus untinted polyurethane film.

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 759 812

10/2

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTEVILLE
VA

Calculation and Cost Optimization of Certain
Solar Generator Thermobattery Parameters (K
Raschetu i Optimizatsii po Stoimosti
Nekotorykh Parametrov Termobatarei
Solnechnykh Generatorov).

(U)

JAN 73 11P Drabkin, L. M. ;
REPT. NO. FSTC-HT-23-1433-72

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. of Geliotekhnika (USSR) n1
pg-15 1971.
DESCRIPTORS: (*THERMOELECTRICITY, COSTS), (*SOLAR CELLS,
COSTS), PRODUCTION, BATTERY COMPONENTS, ELECTRIC
BATTERIES, MATHEMATICAL MODELS, USSR, DESIGN
IDENTIFIERS: TRANSLATIONS (U)
(U)

A method for economic analysis of thermoelectric
generators is discussed in the Russian report. A
formula is presented which permits calculation of the
cost of manufacture of a thermoelectric generator
thermobattery (if material outlay on it is
known). From the formula proposed, it follows in
particular that, with a decrease in the weight of
materials, the cost of a battery decreases linearly.
However, with an increase in the weight of materials
(thickness of elements), the number of
thermoelements per watt generated grows, approaching
infinity. Wage expenditures also increase
considerably here. The formula does not take all
factors into account, and it is impossible to build
up a method for optimizing thermobattery construction
parameter design, especially for the solar
thermoelectric generator. (Author Modified
Abstract)

(U)

AD- 759 812

UNCLASSIFIED

PAGE

80

AD- 757 087

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 757 087

10/2

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTEVILLE
VA

Performance Reliability Calculation for a
Modular Solar Thermoelectric Generator, (U)

JAN 73 8P Malevskii, Yu. N. ;
REPT. NO. FSTC-HT-23-1434-72

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. of Geliotekhnika (USSR) n1
pg-20 1971.
DESCRIPTORS: (*GENERATORS, *THERMOELECTRICITY), SOLAR
RADIATION, MODULES/ELECTRONICS), RELIABILITY,
SEMICONDUCTOR DEVICES, USSR (U)
IDENTIFIERS: *THERMOELECTRIC POWER GENERATION,
TRANSLATIONS (U)

Analysis is given of the overall reliability of a
solar energy converter unit composed of
thermoelectric modules, as a function of the
reliability of individual photocells and component
modules. Expressions are given to determine the
reliability of various module circuit designs having
the modules in series, parallel and combined
connections. The usefulness of redundancy in these
designs is noted. Suggestions are given concerning
the selection of module circuit designs most suitable
for given operational requirements. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD- 756 591 11/7 11/9 13/1
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE
VA

The application of Phenol-Formaldehyde
Plastic Foam as Thermal Insulation for
Solar Water Heaters (Primenenie Fenol-
Formaldegidnogo Penoplasta u Kachestve
Teploizolyatsii dlya Geliyodonagrevatelei), (U)

AUG 72 4P Guner, K. A. ; Jamalov, M. ;
Umarov, G. Ya. ;
REPT. NO. FSTC-WT-23-1578-71

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. from Geliotekhnika (USSR)
n4 1970.
DESCRIPTORS: (*EXPANDED PLASTICS, *THERMAL INSULATION),
HEATERS, SOLAR RADIATION, USSR (U)
IDENTIFIERS: PHENOL FORMALDEHYDE RESINS, *SOLAR
HEATING, TRANSLATIONS (U)

The purpose of the research is to find methods of
improving the efficiency and productivity of a solar
heater, reduce its cost and prolong its service life.
The authors insulated the floor of the heater with
type FRP-I foam plastic on a base of phenol-
formaldehyde resin of the resol type. The
experiment was conducted in parallel with two water
heaters. The first had wood insulation, the second
the FRP-I plastic foam. The technique of
preparing the thermal insulation is given. (U)

AD- 756 591

UNCLASSIFIED

PAGE

81

AD- 756 039

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD- 756 039 10/2 22/2
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE
VA

Space Electric Power Plants. Part 2, (U)
FEB 73 6P Korolev, M. ;
REPT. NO. FSTC-WT-23-921-72

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. of Pravda, Moscow (USSR)
n161 p3, 10 Jun 71. See also Part 1, AD-711
524.
DESCRIPTORS: (*SOLAR PANELS, SPACECRAFT COMPONENTS),
SOLAR CELLS, LIFE EXPECTANCY, PHOTOELECTRIC
CELLS(SEMICONDUCTOR), SILICON, INTEGRATED CIRCUITS,
ELECTRIC POWER PRODUCTION, USSR (U)
IDENTIFIERS: *SOLAR GENERATORS, TRANSLATIONS (U)

Solar batteries and power cells are discussed, 7,
500 photocells comprising a panel 1 meter square
generate more than 100 watts of electrical energy.
Space service life of certain semiconductors is
given as two to three years. Glass coatings
protect panels from heavy protons. Reference is
made to the Boeing Co. project of unfolding glass
fabric panels for space use. Korolev also states
that Soviet scientists confirm the feasibility of
such a project but claim that it will be surpassed.
Thin film highly efficient photocell panels have
been developed in the USSR. Reference is made to
an unspecified plant/factory which manufactures not
only space power units (using solar energy) but
ground solar power plants as well. A 600 watt
pilot installation has been in operation in the
Karakum desert. (Author) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 755 829 13/1

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTEVILLE
VAFilm Solar Energy Collector with Concentric
Circular Seams (Plenochnyi Konsentratort
Solnechnoi Energii s Krugovymi
Konsentricheskimi Shvami).JAN 73 11P Kamilzhanov, A. Kh. ;
REPT. NO. FSTC-HT-23-1208-72

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. from Geliotekhnika (USSR)
in 1970.DESCRIPTORS: (*SOLAR COLLECTORS, FILMS), PLASTICS,
ALUMINUM, SOLAR RADIATION, REFLECTORS, SOLAR FURNACES,
USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

At the present time, plastic films, covered on one side with a thin layer of aluminum, are used as solar energy concentrators in heliotechnology. Commercially produced film is insufficiently broad to obtain concentrators with large concavities. Therefore, in making concentrators with diameters larger than the film width, their surfaces are glued together from pieces. Thus, concentrators with parabolic, radial and circular concentric seams are discussed. The results of experimental investigations of such concentrators was compared with data from investigations of concentrators without seams. Mirror diameters were identical, 0.5m in all variants of the tests, and the width and number of seams were not indicated. (Author) (U)

AD- 755 829

UNCLASSIFIED

PAGE

82

AD- 753 063

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 753 063 10/2 9/1

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

Semiconductor Photoconvertors. (U)

SEP 72 299P Vasiliev, A. M. ; Landsman, A.
P. ;
REPT. NO. FTD-HT-23-317-72

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of "mono.
Poluprovodnikovye Fotoprebrazovateli, Moscow, 1971
p1-225, by Dean F. W. Koolbeck.
DESCRIPTORS: (*PHOTOELECTRIC CELLS(SEMICONDUCTOR),
*SOLAR CELLS), GENERATORS, SPACECRAFT COMPONENTS,
DAMAGE, RADIATION EFFECTS, PHOTOELECTRIC EFFECT, SPACE
ENVIRONMENTS, MANUFACTURING, REVIEWS, USSR (U)
IDENTIFIERS: PHOTOVOLTAIC EFFECT, SOLAR GENERATORS,
THERMOELECTRIC POWER GENERATION, TRANSLATIONS (U)

An effort is made to generalize and systematize material connected with the operating principle and operational characteristics of photoelectric converters which are widely used at present as power-supply sources for space vehicles. The physical principles of the photovoltaic effect and the application of the theory for determination of voltage characteristics and parameters of various types of photoconverters are outlined. Some new directions in photoelectric power engineering are discussed (thermophotoconverters). (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD- 748 694 10/2
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE
VA

Solar Battery-Photovoltaic Cell Power
Supply for Equipment (Ustroistvo Dlya
Pitaniya Potrebitelei Ot Solnechnoi Batarei
S Fotopreobrazo Vatelyami), (U)

JUN 72 2P Grigoryan, R. S. ;
REPT. NO. FSTC-HT-23-750-72

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. of Patent (USSR) 271
619.

DESCRIPTORS: (*POWER SUPPLIES, *SOLAR CELLS),
(*SWITCHING CIRCUITS, POWER SUPPLIES), ELECTRIC RELAYS, (U)
DETECTORS, PATENTS, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

A device is described for the power supply of
consumers by a solar battery with photoconverters
containing a commutator to connect the loads to the
battery. To increase reliability, the commutator
has relays and power sensors, the contacts of which
are included in the circuit of the coil of a relay
separating the solar battery into several sections,
each of which is connected to an individual consumer
through the contact of this relay. (Author) (U)

AD- 748 694

UNCLASSIFIED

PAGE

83

AD- 747 293

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD- 747 293 10/2
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE
VA

Contemporary Status of Studies on Direct
Conversion of Solar Energy to Electrical
Energy (Sovremennoe Sostoyanie Issledovaniy
po Prikladny Preobrazovaniyu Solnechnoi
Energii v Elektrocheskuyu), (U)

JUL 72 10P Lidorenko, N. S. ;
REPT. NO. FSTC-HT-23-1429-71
PROJ: FSTC-T7023012301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. of Geliotekhnika (USSR) n6
03-9 1969, by Albert L. Peabody.
DESCRIPTORS: (*ENERGY CONVERSION, SOLAR RADIATION),
ELECTRIC POWER PRODUCTION, SOLAR CELLS, PHOTOELECTRIC
EFFECT, THERMOELECTRICITY, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

Photoelectric, thermoelectric and thermoemission
methods of direct conversion of solar energy into
electric energy are studied. The article presents
a review of modern methods of investigation.
(Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 747 033 3 2

BOSTON COLL CHESTNUT HILL MASS DEPT OF PHYSICS

A Model for U-Shaped Solar Burst Spectra, (U)

MAY 72 63P Kalman, Gabor ; Yukon, Stanford

: Bakshi, Pradip ;

REPT. NO. Scientific-1

CONTRACT: F19628-72-C-0003

PROJ: AF-4643

TASK: 464303

MONITOR: AFCL 72-0324

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOLAR FLARES, MATHEMATICAL MODELS), SOLAR RADIATION, CERENKO: RADIATION, ELECTRONS, PROTONS, PLASMAS(PHYSICS), MAGNETIC FIELDS (U)
 IDENTIFIERS: COMPUTER AIDED ANALYSIS, ELECTRONS, SOLAR ENERGY, SOLAR MAGNETIC FIELDS, SOLAR PROTONS (U)

A model, for U-shaped solar bursts based on one single group of moderately relativistic electrons radiating in an ambient cold magnetoplasma is presented. Results of computer calculations are discussed. Suggestions for comparison with observation are made. Speculations about the mechanism of proton acceleration are included. (Author) (U)

AD- 747 033

UNCLASSIFIED

PAGE

84

AD- 746 325

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 746 326 4/1

AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONS

The Aerospace Corporation Space Science Program Report to CCSPAR CY 1971. (U)

DESCRIPTIVE NOTE: Rept. for Jan-Dec 71,

DEC 71 20P Paulikas, George A. ;

REPT. NO. TR-0172(2260-01)-2

CONTRACT: F04701-71-C-0172

MONITOR: SAMSO TR-72-169

UNCLASSIFIED REPORT

DESCRIPTORS: (*MAGNETOSPHERE, SCIENTIFIC RESEARCH), (*UPPER ATMOSPHERE, PLASMAS(PHYSICS)), ATMOSPHERIC SOUNDING, IONOSPHERE, IONOSPHERIC DISTURBANCES, MAGNETIC STORMS, ELECTRON DENSITY, SOLAR DISTURBANCES, VAN ALLEN RADIATION BELT, SCIENTIFIC SATELLITES (U)
 IDENTIFIERS: MAGNETOSPHERIC RING CURRENTS, OVI-10 SATELLITE, OVI-15 SATELLITE, OV3-3 SATELLITE, *ATMOSPHERIC PHYSICS, ATS-1 SATELLITE, ATS-2 SATELLITE, ELECTRONS, SOLAR ENERGY, SOLAR PROTONS (U)

Results obtained during 1971 by the Space Research Program of The Aerospace Corporation are presented. The results deal with magnetospheric physics and the physics of the upper atmosphere. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 745 364 10/2

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTEVILLE VA

A Study of 'Photovolt' Generator at High Radiation Intensity (Issledovanie Elektricheskikh Kharakteristik Generatorov 'Fotovolt' pri povyshennoi Moshchnosti Izlucheniya).

(U)

D. S. ; Landsman, A. P. ; Strel'ov,

JUN 72 5P

REPT. NO. FSTC-WT-23-1014-72

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. from Geliotekhnika (USSR) n3 p3-6 1970, by Albert L. Peabody.
 DESCRIPTORS: (*SOLAR CELLS, DESIGN), PHOTOELECTRIC CELLS(SEMICONDUCTOR), PHOTOSENSITIVITY, ELECTRICAL PROPERTIES, USSR
 IDENTIFIERS: PHOTOVOLTAIC CELLS, SOLAR GENERATORS, TRANSLATIONS

(U)

(U)

The new high voltage photoelectric generator 'Photovolt' is described. The spectral sensitivity and current-voltage characteristics are given. The generator efficiency rises from 7% to 10% while the light power increases from normal value up to 4 kw/sq m. (Author)

(U)

AD- 745 364

UNCLASSIFIED

PAGE

85

AD- 745 303

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 745 309 4/1

AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONS

Annual and Sub-Annual Effects of EUV (Extreme Ultraviolet) Heating. Volume II. Comparison with Density Observations.

(U)

APR 72 33P Ching, Barbara K. ; Chiu, Yam

T. ;

REPT. NO. TR-0172(2260-10)-9-Vol-2

CONTRACT: F04701-71-C-0172

MONITOR: SAMSO TR-72-116-Vol-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-745 305.
 DESCRIPTORS: (*UPPER ATMOSPHERE, HEATING), ABSORPTION, ULTRAVIOLET RADIATION, FOURIER ANALYSIS, DENSITY, SOLAR RADIATION
 IDENTIFIERS: *ATMOSPHERIC HEATING, ATMOSPHERIC DENSITY, SEASONAL VARIATIONS, SOLAR HEATING, *THERMOSPHERE

(U)

(U)

By a detailed comparison of annual and sub-annual components of extreme ultraviolet (EUV) absorption heat input with those of the Jacchia models, the authors consider the importance of EUV heating in the annual and sub-annual variations of the upper atmosphere. When all the geometrical effects of EUV heat input have been taken into account, it is found that a remarkable correspondence exists between properties of each harmonic component of EUV heat input and Jacchia model temperature and densities. Equinoctial latitude independence of diurnal averaged annual and sub-annual components of heat input and density is proposed as a test of the significance of the EUV heat input. The Jacchia model is found to satisfy this test rigorously. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 745 305 4/1
AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONSAnnual and Sub-Annual Effects of EUV
(Extreme Ultraviolet) Heating. Volume I.
Harmonic Analysis.

(U)

APR 72 39P Ching, Barbara K. ; Chiu, Yam
T. ;
REPT. NO. TR-0172(2260-10)-9-Vol-1
CONTRACT: F04701-71-C-0172
MONITOR: SAMSO TR-72-116-Vol-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-745 309.
 DESCRIPTORS: (UPPER ATMOSPHERE, HEATING), DENSITY,
 ULTRAVIOLET RADIATION, SOLAR RADIATION, PHOTOCHEMICAL
 REACTIONS, GAS IONIZATION, DISSOCIATION, FOURIER
 ANALYSIS, ABSORPTION, HARMONIC ANALYSIS (U)
 IDENTIFIERS: ATMOSPHERIC DENSITY, -ATMOSPHERIC
 HEATING, PHOTOIONIZATION, SEASONAL VARIATIONS, SOLAR
 HEATING (U)

The authors compute the rate of solar extreme ultraviolet radiation (EUV) heating in the upper atmosphere by photo-dissociation and photo-ionization, taking care to include properly the effects of oblique incidence of solar flux, sphericity of the atmosphere and ellipticity of the earth's orbit. The time and latitudinal variations of the computed heat function are revealed by numerical Fourier analysis of the heat function into harmonics of the yearly cycle. It is shown that EUV absorption contains a latitude independent semi-annual component of heating with the proper phase to account for the semi-annual density variations. Further, the annual component of the heat function predicts the existence of summer polar density increases in the northern and southern hemispheres. (Author)

(U)

AD- 745 305

UNCLASSIFIED

PAGE

86

AD- 744 404

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 744 404 4/1
AIR FORCE CAMBRIDGE RESEARCH LABS L G HANSCOM FIELD
MASSRapid Access of Solar Electrons to the
Polar Caps.

(U)

OCT 71 7P Turtle, J. P. ; Oelbermann,
E. J. ; Jr.; Blake, J. B. ; Lanzerotti, L. J.
; Vampola, A. L. ;
REPT. NO. AFRL-72-0301
PROJ: AF-7661
TASK: 766104

UNCLASSIFIED REPORT

Availability: Pub. in Jnl. of Geophysical
 Research, 77 n4 p730-735, 1 Feb 72.
 SUPPLEMENTARY NOTE: Revision of report dated 17 Aug
 71.
 DESCRIPTORS: (-MAGNETOSPHERE, SOLAR RADIATION),
 ELECTRONS, IONOSPHERIC DISTURBANCES, VERY LOW FREQUENCY, (U)
 POLAR REGIONS, PROTONS (U)
 IDENTIFIERS: POLAR CAP ABSORPTION, ELECTRONS, SOLAR
 ENERGY (U)

Simultaneous measurements of solar electrons and protons in interplanetary space and in the magnetotail were made during the onset of the November 2, 1969, solar-particle event. These particle measurements, when compared with continuous transpolar VLF measurements on three propagation paths, indicate that the solar electrons have access to the magnetotail and north polar cap with a time delay t such that $0 < \text{or approximately equal } t < 1 \text{ min. (Author)}$

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD- 743 031 20/12 9/1 10/2
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE
VA

Semiconductor Solar Energy Converters and the
Phenomenon of Photo Conductivity Quenching
(Poluprovodnikovye Preobrazovateli Solnchnoi
Energii i Yavlenie Gasheniya
Fotoprovodimosti). (U)

FEB 72 9P Isamukhamedova, M. S. ;
Karageorgii-Alkalaev, P. M. ;
REPT. NO. FSTC-HT-23-1577-71
PROJ: FSTC-T7023012301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. from Geliotekhnika (USSR)
n3 1970.
DESCRIPTORS: (*SEMICONDUCTORS, PHOTOCONDUCTIVITY),
(*PHOTOELECTRIC CELLS, SEMICONDUCTOR),
PHOTOCONDUCTIVITY), (*SOLAR CELLS, ENERGY CONVERSION),
SOLAR RADIATION, SEMICONDUCTOR DEVICES, ATOMIC ENERGY
LEVELS, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

A semiconductor model with two impurity levels
exchanging current carriers is analyzed to determine
the conditions for the occurrence of
photoconductivity quenching. The effects of this
phenomenon on efficiency are described.
(Author) (U)

AD- 743 031

UNCLASSIFIED

PAGE

87

AD- 742 111

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD- 742 111 11/9 13/1
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE
VA

Study of Phototechnical Characteristics of
Polymer Films Used as Transparent Coatings
in Solar Water Heaters (Issledovanie
Svetotekhnicheskikh Kharakteristik Polimernykh
Plenok, Primenyayemykh dlya Proznachnogo
Pokrytiya i Geliogonagrevatelyakh). (U)

FEB 72 9P Zhamalov, A. ; Eliseev, V. N.
; Popkova, A. M. ;
REPT. NO. FSTC-HT-23-1580-71
PROJ: FSTC-T7023012301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. of Geliotekhnika (USSR) n4
p29-33 1970.
DESCRIPTORS: (*PLASTICS, *LIGHT TRANSMISSION), POLYAMIDE
PLASTICS, POLYETHYLENE PLASTICS, REFLECTIVITY, SOLAR
RADIATION, HEATERS, USSR (U)
IDENTIFIERS: POLYETHYLENE TEREPHTHALATE, *POLYMERIC
FILMS, *SOLAR HEATING, TRANSLATIONS (U)

The light transmittance and the reflection on
coefficients of polyamide, PET, and polyethylene
films were determined. The 75 micrometer films
absorbed the following amounts of solar light:
Polyamide 0.5%, PET 0.5%, and polyethylene
0.2%. The films were recommended for use in solar
water heaters. (Author, modified-PL) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 741 524 10/2 22/2
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE
VA

Space Electric Power Plants, Part I
(Litsom & Solntsov),

(U)

72 7P Lidorenko, N. ;
REPT. NO. FSTC-HT-23-923-72
PROJ: FSTC-T7023012301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. from Pravda, Moscow
(USSR) n160 p3, 9 Jun 71, by Donald E.
Chamberlain.

DESCRIPTORS: (*SOLAR CELLS, SPACECRAFT COMPONENTS),
ENERGY CONVERSION, SEMICONDUCTOR DEVICES, USSR
IDENTIFIERS: SOLAR GENERATORS, TRANSLATIONS

(U)
(U)

The theoretical aspect of solar power plants of
Soviet spacecraft is explained by Lidorenko, an
expert in the field of rechargeable power sources.
Development of solar batteries for Lunokhod-1
solves new problems. The type of semiconductor
chosen performs well in the 100-150C and withstands
vigorous cooling. The semiconductor passed through
a lunar eclipse intact when the cover of the
Lunokhod was left open. (Author)

(U)

AD- 741 524

UNCLASSIFIED

PAGE

88

AD- 738 925

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 738 925 3/2
IOWA UNIV IOWA CITY DEPT OF PHYSICS AND ASTRONOMY

Direct Observations of Low-Energy Solar
Electrons Associated with a Type III Solar
Radio Burst,

(U)

FEB 72 56P Frank, L. A. ; Gurnett, D.

A. ;

REPT. NO. U. of Iowa 72-2

CONTRACT: N00014-68-A-0196-0003, NGL-16-001-002

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Sponsored in part by Contracts
NA55-11039 and NA55-11074.

DESCRIPTORS: (*SOLAR RADIATION, EXTRATERRESTRIAL RADIO
WAVES), (*SOLAR FLARES, ELECTRONS), INTENSITY, POWER
SPECTRA, CORRELATION TECHNIQUES, SCIENTIFIC SATELLITE
IDENTIFIERS: *ELECTRONS, *SOLAR ENERGY, *SOLAR RADIO
BURSTS

(U)

(U)

Direct observations of the impulsive ejection of a
highly anisotropic, low-energy solar electron packet
which was accompanied by a Type 3 solar radio noise
burst detected simultaneously with instrumentation on
the satellite IMP-6 have been examined here.

These events were associated with a solar flare
commencing at 0935 UT, 6 April 1971, on the
western limb of the sun.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 736 430

4/1

AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONS

Rapid Access of Solar Electrons to the Polar Caps.

(U)

DESCRIPTIVE NOTE: Rept. for Jul-Aug 71.

DEC 71 23P Turtle, John P.; Delberman,

E. J., Jr.; Blake, J. Bernard; Lancorotti,

Louis J.; Vampola, Alfred L.;

REPT. NO: TR-0172-2260-201-11

CONTRACT: F04701-71-C-0172

MONITOR: SAMSO TR-71-318

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOLAR RADIATION, POLAR REGIONS), (*MAGNETOSPHERE, ELECTRONS), SOLAR FLARES, IONOSPHERIC DISTURBANCES, ELECTRON DENSITY, VERY LOW FREQUENCY, COSMIC RAYS, PROTONS (U)
IDENTIFIERS: OV5-6 SATELLITE, SOLAR COSMIC RAYS, *ELECTRONS, *SOLAR ENERGY (U)

Simultaneous measurement of solar electrons and protons in interplanetary space and in the magnetotail were made during the onset of the 2 November 1969 solar particle event. These particle measurements, when compared with continuous trans-polar VLF measurements on three propagation paths, indicate the solar electrons have access to the magnetotail and north polar cap with a time delay t such that 0 approximately equal or $< t$ less than 1 min. (Author) (U)

AD- 736 430

UNCLASSIFIED

PAGE

89

AD- 735 305

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 735 305

4/1

AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONS

Solar Photoabsorption and Thermal Processes in the Polar Thermosphere.

(U)

DESCRIPTIVE NOTE: Rept. for Jul 70-Jun 71.

NOV 71 69p

Edward L. ; Ching, Barbara K. ; Breig,

REPT. NO: TR-0172(2260-10)-5

CONTRACT: F04701-71-C-0172

MONITOR: SAMSO TR-71-320

UNCLASSIFIED REPORT

DESCRIPTORS: (*UPPER ATMOSPHERE, SOLAR RADIATION), (*OXYGEN, UPPER ATMOSPHERE), PHOTOCHEMISTRY, DISSOCIATION, ABSORPTION, IONIZATION, ULTRAVIOLET RADIATION, ATMOSPHERE MODELS, POLAR REGIONS, DIURNAL VARIATIONS (U)
IDENTIFIERS: SOLAR HEATING, SOLAR ULTRAVIOLET RADIATION, *THERMOSPHERE (U)

The report reviews a number of physical processes that occur in the thermosphere and significantly affect its neutral state through the deposition or loss of thermal energy and by modification of its composition. Specifically, the processes discussed are: (1) thermal heating from absorbed solar radiation in the wavelength region below 2400 Å, (2) photodissociation of O₂, (3) thermal heating from atomic oxygen recombination, and (4) cooling by infrared emission of atomic oxygen. Basic concepts associated with the calculation of the various processes are discussed in detail, and most recent data on relevant physical parameters are reviewed. Numerical models of the heating, dissociation, and cooling are presented on the basis of a nominal atmospheric model. Special emphasis is placed on diurnal, seasonal, and latitudinal variations. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 726 114 10/2 20/12
NORTHEASTERN UNIV BOSTON MASS

Research in Solar Energy Conversion. (U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 66-30 Sep 70.

JAN 71 163P Nowak, Melville B. ;

CONTRACT: F19628-67-C-0119

PROJ: AF-8659

TASK: 865901

MONITOR: AFCHL 71-0163

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOLAR CELLS, RELIABILITY(ELECTRONICS)),
(*PHOTOELECTRIC CELLS(SEMICONDUCTOR)), MANUFACTURING),
SEMICONDUCTING FILMS, VACUUM PLATING,
CARRIERS(SEMICONDUCTORS), SILICON, EPITAXIAL GROWTH,
COMPUTER PROGRAMS, ABSORPTION SPECTRA, ELECTRICAL
PROPERTIES, GALLIUM COMPOUNDS, PHOSPHIDES, GALLIUM
ARSENIDES, GERMANIUM, ZINC COMPOUNDS, SELENIDES
IDENTIFIERS: ZINC SELENIDES, GALLIUM PHOSPHIDES,
HETEROJUNCTIONS (U)
(U)

IAC ACCESSION NUMBER: NCIC-081592

IAC DOCUMENT TYPE: YCIC -HARD COPY--

The following topics related to photovoltaic solar-

energy conversion were investigated: Transient

Response of Momentarily Reverse-Biased

Solar Cells, Electrodiffusion Effects in

Semiconductors, Effect of Electric Fields and

Charged Particle Impingement on Planar-

Edge-Growth of Single-Crystal Silicon

Films on Amorphous Quartz, and Heterojunction

Photovoltaic Solar Cells. (U)

IAC SUBJECT TERMS: M--(U)SILICON COATINGS, QUARTZ
SUBSTRATE, SUBSTRATES, SINGLE CRYSTALS, CRYSTAL STRUCTURE,
GALLIUM PHOSPHIDE COATINGS, SOLAR CELL DIODES, SILICON
SUBSTRATE, GERMANIUM SUBSTRATE, EPITAXIAL DEPOSITION.;

AD- 726 114

UNCLASSIFIED

PAGE

90

AD- 721 662

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 721 662 10/2 18/4
TRAPELO, WEST RICHMOND CALIF

A Study of Conventional and Unconventional
RADIAC Power Sources. (U)

DESCRIPTIVE NOTE: Final rept.,

DEC 70 74P Sturman, Ivan ;

REPT. NO. TUX-6063

CONTRACT: DAH-C20-69-C-0122

PROJ: OCD-2122F

UNCLASSIFIED REPORT

DESCRIPTORS: (*RADIATION MEASURING INSTRUMENTS, *POWER
SUPPLIES), CIVIL DEFENSE, PRIMARY BATTERIES, COSTS,
MONITORS, THERMOELECTRICITY, THERMIONIC CONVERTERS,
SOLAR CELLS, FUEL CELLS (U)
IDENTIFIERS: RADIACMETERS, RADIACMETER POWER SOURCES,
RESERVE BATTERIES (U)

Feasible substitutes for RADIAC power sources are
identified and evaluated. The experimental methods
and the results are described. Cautions that
should be observed in the selection of RADIAC power
sources are described. Cost comparisons are made
of power sources considered to be suitable D-cell
substitutes and conventional D-cells.
Recommendations are made for RADIAC power sources
and for further study topics. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 720 136 22/1 7/1
 CALIFORNIA UNIV LOS ANGELES DEPT OF CHEMISTRY
 Industrial Chemistry in Space.

(U)

MAR 70 5P Libby, M. F. ; Payton, P.
 H. ;
 CONTRACT: AF-AFOSR-1255-67, NOL-05-007-003
 PROJ: AF-9538
 MONITOR: AFOSR TR-71-0535

UNCLASSIFIED REPORT

Availability: Pub. in Proceedings of the ASME
 Space Technology and Heat Transfer Conference,
 Los Angeles, Calif. 21-24 Jun 70. 70-Av/Spt-
 4. 50.

DESCRIPTORS: (*CHEMICAL ENGINEERING, *SPACE STATIONS),
 (*SOLAR FURNACES, SPACE STATIONS, CRYSTAL GROWTH,
 METALLURGY, ASTRONAUTICS (U)

Some aspects of chemical manufacture in an orbiting
 spacecraft are presented and discussed. The design
 and operation of a 100-meter-dia parabolic solar
 furnace is considered. Some further subjects of
 future chemical interest are also presented.
 (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 704 754 13/1 20/13
 FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

(U)

HIGH-TEMPERATURE SOLAR FURNACE.

MAR 70 9P Baum, V. A. ; Annaev, A. A.
 ; Atlijev, K. ; Kurbaneldyev, B. ;
 REPT. NO. FTO-HT-23-62-70
 PROJ: FTO-6040102
 TASK: DIA-T69-04-9

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Gel. tekhnika
 (USSR) n2 p56-59 1969, by V. Mesenzeff.
 DESCRIPTORS: (*SOLAR FURNACES, HIGH TEMPERATURE),
 REFRACTORY MATERIALS, OPTICAL TRACKING, CALORIMETRY,
 HEAT FLUX, THERMAL RADIATION, MATHEMATICAL ANALYSIS,
 USSR

IDENTIFIERS: TRANSLATIONS

(U)
(U)

Description of the furnace and the absolute
 calorimeter for investigation power characteristics
 of solar power furnaces are given and also power
 characteristics and the region of temperatures in
 which thermophysical and radiation properties of
 refractories can be investigated are presented.
 (Author)

(U)

AD- 720 136

UNCLASSIFIED

PAGE

91

AD- 704 754

UNCLASSIFIED

ZOM09

AD-A083 000 DEFENSE TECHNICAL INFORMATION CENTER ALEXANDRIA VA
SOLAR ENERGY.(U)

F/G 10/1

APR 80

UNCLASSIFIED DTIC/BIB-80/01

NL

2 OF 2

AD-A083 000



END
DATE
FILMED
5-80
DTIC

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 704 002

10/2

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

MATCHING A THERMIONIC CONVERTER WITH A SOLAR CELL IN
A SOLAR POWER ARRAY, (U)

FEB 70 7P Arifov,U. A. ;Kulagin,A.

I. ;Nagaeva,D. M. ;

REPT. NO. FTD-HT-23-42-70

PROJ: FTD-6040102

UNCLASSIFIED REPORT

SUPPLEMENTAR NOTE: Edited trans. of Gelliotekhnika

(USSR) ni p41-43 1969, by L. Thompson.

DESCRIPTORS: (*SOLAR COLLECTORS, EFFICIENCY),

(*THERMIONIC CONVERTERS, DESIGN), SOLAR CELLS,

EXPERIMENTAL DESIGN, CESIUM, FEASIBILITY STUDIES, TEST (U)

METHODS, ANALYSIS, USSR (U)

IDENTIFIERS: TRANSLATIONS (U)

The aim of the report is to determine the possibility of combining a high-temperature thermionic converter with a solar cell with partial use of its outer surface as the cathode with the introduction of the concentrator parameters corresponding to glass projector mirrors.
(Author)

(U)

AD- 704 002

UNCLASSIFIED

PAGE

92

AD- 701 739

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 701 739

4/1

AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONS

PROPAGATION OF SOLAR PARTICLES TO THE POLAR
CAPS. (U)

DESCRIPTIVE NOTE: Rept. for Jan-Jun 69.

DEC 69 29P Paulikas,George A. ;Blake,

J. Bernard ;Vampola,Alfred L. ;

REPT. NO. TR-0066(5260-20)-11

CONTRACT: F04701-69-C-0066

MONITOR: SAMSO TR-70-30

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOLAR RADIATION, MAGNETOSPHERE),
(*CHARGED PARTICLES, POLAR REGIONS), PROTONS, ELECTRONS,
SCIENTIFIC SATELLITES (U)

IDENTIFIERS: UV1-12 SATELLITE, QV3-3 SATELLITE, QV1-15
SATELLITE, POLAR CAP ABSORPTION, RADIATION BELTS,
ELECTRONS, SOLAR ENERGY, SOLAR COSMIC RAY (U)

Measurements of solar particles over the polar caps by satellite-borne experiments are summarized. Solar protons down to about 200-kev energy and solar electrons to about 40-kev energy reach the polar caps. In general, solar electrons illuminate the polar caps uniformly during a solar particle event; in contrast, solar proton fluxes exhibit a great deal of spatial structure. Some diffusion of solar protons across the magnetic field is required in order to account for the experimental results.
(Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 701 352 10/2 22/2 18/14
 NAVY SPACE SYSTEMS ACTIVITY LOS ANGELES CALIF
 SPACE ELECTRICAL POWER SYSTEMS FOR THE MID-
 1970'S.

(U)

DESCRIPTIVE NOTE: Final technical rept.,

SEP 69 122P Silverman, Richard V. ;
 REPT. NO. NSSA-R40-69-4

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPACECRAFT, *POWER SUPPLIES), ELECTRIC
 POWER PRODUCTION, NUCLEAR REACTORS, THERMOELECTRICITY,
 RANKINE CYCLE, BRAYTON CYCLE, SOLAR CELLS, SOLAR
 COLLECTORS, COSTS, PLANNING, POLAR ORBIT TRAJECTORIES,
 LIFE EXPECTANCY (U)
 IDENTIFIERS: SNAP-10A REACTORS, THERMOELECTRIC POWER (U)
 GENERATION (U)

An evaluation of candidate electrical power systems capable of providing up to 6.5 kw for an earth orbiting mission is presented in this report. Three power systems could be ready for a mid-1970 launch, if proper funding were provided for development programs. They are: a Solar Cell/Battery System; a Reactor/Thermoelectric System; and a Reactor/Organic Rankine System. The preferred system for the proposed mission is the Reactor/Thermoelectric system, based on its inherent simplicity, lower weight, lower unit costs, and high degree of technology readiness relative to the competing systems. (Author)

(U)

AD- 701 352

UNCLASSIFIED

PAGE

93

AD- 699 358

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 699 358 13/1 10/1
 QUARTERMASTER RESEARCH AND DEVELOPMENT CENTER NATICK
 MASS

EXPLORATORY STUDY TO DETERMINE FAVORABLE LOCATIONS
 IN THE UNITED STATES FOR CONSTRUCTION OF A SOLAR
 FURNACE.

(U)

DESCRIPTIVE NOTE: Research study rept.,
 NOV 55 26P Hull, Blanche B. ;
 REPT. NO. QROC-EA-4

PROJ: DA-7-83-05-004A

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOLAR FURNACES, SITE SELECTION),
 CONSTRUCTION, THERMAL RADIATION, CLOUDS, MOISTURE, ARMY
 OPERATIONS, FEASIBILITY STUDIES, GRAPHICS, STATISTICAL
 DATA, UNITED STATES (U)

The total receipt of radiant solar energy at the earth's surface is dependent upon the clarity of the atmospheric envelope and the number of sunshine hours. For short-wave solar radiation, water vapor and clouds are the two major absorbers and scatterers. The graphs of solar radiation and the average number of sunshine hours shown in this report indicate that the stations in the Southwest United States have the most favorable climatic conditions for the location of a solar furnace that will provide thermal radiation of high intensity throughout the year. On a climatological basis the arid Southwest appears to be the logical site for the solar furnace. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
 AD- 698 653 10/1 21/3 22/2
 ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT
 PARIS (FRANCE)

SPACE POWER SYSTEMS. PART II. (U)

NOV 69 295P
 REPT. NO. AGARD-Ograph-123-Pt-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NATO furnished. See also Part 1, AD-698 652. Presented by the Propulsion and Energetics Panel and the Consultant and Exchange Programme of the Advisory Group for Aerospace Research and Development, at Universite' Libre de Bruxelles, Belgium, 2-6 Oct 67.
 DESCRIPTORS: (*SPACE PROPULSION, SYMPOSIA), TURBINES, POWER SUPPLIES, MOTOR GENERATORS, THERMIONIC CONVERTERS, THERMOELECTRICITY, SOLAR RADIATION, SOLAR CELLS, NUCLEAR REACTORS, ELECTROCHEMISTRY, FUEL CELLS, BATTERY COMPONENTS, ELECTRIC BATTERIES, PHOTOELECTRIC CELLS(SEMICONDUCTOR), ENERGY MANAGEMENT, OPTIMIZATION, BELGIUM (U)
 IDENTIFIERS: AC GENERATORS, PHOTOVOLTAIC CELLS, THERMOELECTRIC POWER GENERATION (U)

Contents: Turbomachinery for space power; Alternators for space power applications; Technology of thermoelectric and thermionic energy; Engineering aspects of thermionic energy conversion; Electrochemical space power sources; Photovoltaic devices and systems; Optimization of energy storage for solar space power; and Panel discussion on space power sources. (U)

AD- 698 653

UNCLASSIFIED

PAGE

94

AD- 698 652

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
 AD- 698 652 10/1 22/2 21/6
 ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT
 PARIS (FRANCE)

SPACE POWER SYSTEMS. PART I. (U)

NOV 69 349P
 REPT. NO. AGARD-Ograph-123-Pt-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NATO furnished. See also Part 2, AD-698 653. Presented by the Propulsion and Energetics Panel and the Consultant and Exchange Programme of the Advisory Group for Aerospace Research and Development, at Universite' Libre de Bruxelles, Belgium, 2-6 Oct 67.
 DESCRIPTORS: (*SPACE PROPULSION, SYMPOSIA), HEAT ENGINES, SPACECRAFT NUCLEAR PROPULSION, SOLAR ROCKETS, SOLAR CELLS, FUEL CELLS, ENERGY CONVERSION, RANKINE CYCLE, THERMIONIC CONVERTERS, THERMOELECTRICITY, TURBINES, BRAYTON CYCLE, ELECTROCHEMISTRY, ION ENGINES, SOLAR RADIATION, POWER SUPPLIES, OPTIMIZATION, STATE-OF-THE-ART REVIEWS, BELGIUM (U)
 IDENTIFIERS: AC GENERATORS, RADIOISOTOPE HEAT SOURCES, SNAP (U)

Contents: Power requirements, similitudes and limitations in trans-conventional propulsion systems; Space power systems; Nuclear space power systems; (Nuclear space power systems, Reactor space power systems, Radioisotope space power); Mechanical heat engines for space power systems. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 696 425 10/3 10/2 10/1

ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

POWER SOURCES CONFERENCE (20th ANNUAL), HELD
24-25-26 MAY 1966. PROCEEDINGS. (U)

66 260P

UNCLASSIFIED REPORT

Availability: Paper copy available from PSC
Publication Committee, Red Bank, N. J. 07701.
\$15.00.

SUPPLEMENTARY NOTE: See also Annual rept. no. 19, AD-696 424 and Annual rept. no. 21, AD-696 426.

DESCRIPTORS: (*POWER SUPPLIES, SYMPOSIA), (*FUEL CELLS, SYMPOSIA), (*STORAGE BATTERIES, SYMPOSIA), (*PRIMARY BATTERIES, SYMPOSIA), (*ENERGY CONVERSION, POWER SUPPLIES), (*SOLAR CELLS, SYMPOSIA), BATTERY COMPONENTS, ELECTRIC BATTERIES, ELECTRODES, GAS GENERATING SYSTEMS, ALKALINE BATTERIES, HYDROGEN, VOLTAGE REGULATORS, THERMOELECTRICITY, GENERATORS, THERMIONIC CONVERTERS, SILICON, INVERTERS (U)

IDENTIFIERS: *METAL AIR BATTERIES, *NICKEL CADMIUM BATTERIES, *THERMOELECTRIC POWER GENERATION (U)

Topics included are: Fuel cell battery systems;
High energy density battery systems; Secondary
batteries; Thermal and solar energy conversion;
Power conditioning. (U)

AD- 696 425

UNCLASSIFIED

PAGE

95

AD- 696 424

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 696 424 10/3 10/2 10/1

ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

POWER SOURCES CONFERENCE (19th ANNUAL), HELD
18-20 MAY 1965. PROCEEDINGS. (U)

65 199P

UNCLASSIFIED REPORT

Availability: Paper copy available from PSC
Publication Committee, Red Bank, N. J. 07701.
\$10.00.

SUPPLEMENTARY NOTE: See also Annual rept. no. 18, AD-696 423 and Annual rept. no. 20, AD-696 425.

DESCRIPTORS: (*POWER SUPPLIES, SYMPOSIA), (*FUEL CELLS, SYMPOSIA), (*STORAGE BATTERIES, SYMPOSIA), (*PRIMARY BATTERIES, SYMPOSIA), (*ENERGY CONVERSION, POWER SUPPLIES), (*SOLAR CELLS, SYMPOSIA), ELECTRODES, BATTERY COMPONENTS, ELECTRIC BATTERIES, ALKALINE BATTERIES, INVERTERS, BATTERY CHARGERS, DC TO DC CONVERTERS, THERMIONIC CONVERTERS, PHOTOELECTRIC CELLS(SEMICONDUCTOR), THERMOELECTRICITY, GENERATORS, SEMICONDUCTOR DEVICES (U)

IDENTIFIERS: *THERMOELECTRIC POWER GENERATION (U)

Topics included are: Fuel cell batteries;
Secondary batteries; New battery systems; Power
conditioning; Thermal energy conversion; TPV and
solar energy conversion. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 696 423 10/3 10/2 10/1
ARMY ELECTRONICS COMMAND FORT MONMOUTH N JPOWER SOURCES CONFERENCE (18th ANNUAL), HELD
19-21 MAY 1964. PROCEEDINGS. (U)

64 193P

UNCLASSIFIED REPORT

Availability: Paper copy available from PSC
Publication Committee, Red Bank, N. J. 07701.
\$10.00.

SUPPLEMENTARY NOTE: See also Annual rept. no. 17, AD-696 422 and Annual rept. no. 19, AD-696 424.

DESCRIPTORS: (*POWER SUPPLIES, SYMPOSIA), (*FUEL CELLS, SYMPOSIA), (*STORAGE BATTERIES, SYMPOSIA), (*PRIMARY BATTERIES, SYMPOSIA), (*ENERGY CONVERSION, POWER SUPPLIES), (*SOLAR CELLS, SYMPOSIA), GAS GENERATING SYSTEMS, HYDROGEN, ELECTRODES, BATTERY COMPONENTS, ELECTRIC BATTERIES, ALKALINE BATTERIES, DC TO DC CONVERTERS, INVERTERS, GENERATORS, THERMOELECTRICITY, THERMIONIC CONVERTERS, GUIDED MISSILE BATTERIES, DAMAGE, RADIATION EFFECTS, VOLTAGE REGULATORS, BATTERY CHARGERS, PHOTOELECTRIC CELLS(SEMICONDUCTOR) (U)

IDENTIFIERS: NICKEL CADMIUM BATTERIES, SILVER CADMIUM CELLS, SILVER ZINC BATTERY CELLS, THERMOELECTRIC POWER GENERATION (U)

Topics included are: Fuel cell batteries;
Secondary batteries; Primary batteries;
Electrical to Electrical energy conversion;
Thermal energy conversion; Solar energy conversion. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 696 422 10/3 10/2 10/1
ARMY ELECTRONICS COMMAND FORT MONMOUTH N JPOWER SOURCES CONFERENCE (17th ANNUAL), HELD
21-23 MAY 1963. PROCEEDINGS. (U)

63 195P

UNCLASSIFIED REPORT

Availability: Paper copy available from PSC
Publication Committee, Red Bank, N. J. 07701.
\$10.00.

SUPPLEMENTARY NOTE: See also Annual rept. no. 16, AD-696 421 and Annual rept. no. 18, AD-696 423.

DESCRIPTORS: (*POWER SUPPLIES, *SYMPOSIA), (*SOLAR CELLS, SYMPOSIA), (*ENERGY CONVERSION, POWER SUPPLIES), (*FUEL CELLS, SYMPOSIA), (*STORAGE BATTERIES, SYMPOSIA), (*PRIMARY BATTERIES, SYMPOSIA), SILICON, DAMAGE, RADIATION EFFECTS, GENERATORS, THERMOELECTRICITY, THERMIONIC CONVERTERS, ELECTRODES, BATTERY COMPONENTS, ELECTRIC BATTERIES, ALKALINE BATTERIES, THERMOCOUPLES, DC TO DC CONVERTERS, INVERTERS, FREQUENCY CONVERTERS (U)

IDENTIFIERS: AMMONIA BATTERIES, NICKEL CADMIUM BATTERIES, SILVER ZINC BATTERY CELLS, SILVER CADMIUM CELLS, *THERMOELECTRIC POWER GENERATION (U)

Topics included are: Solar energy conversion;
Thermal energy conversion; Fuel cell batteries;
The future of fuel cells; Secondary batteries;
Primary batteries; Electrical conversion. (U)

AD- 696 423

UNCLASSIFIED

PAGE

96

AD- 696 422

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 696 421 10/3 10/2 10/1
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

POWER SOURCES CONFERENCE (16th ANNUAL), HELD
22-24 MAY 1962. PROCEEDINGS.

MAY 62 184P

UNCLASSIFIED REPORT

Availability: Paper copy available from PSC
Publication Committee, Red Bank, N. J. 07701.
\$10.00.

SUPPLEMENTARY NOTE: See also Annual rept. no. 15, AD-
421 601, and Annual rept. no. 17, AD-696 422.
DESCRIPTORS: (*POWER SUPPLIES, *SYMPOSIA), (*FUEL CELLS,
SYMPOSIA), (*STORAGE BATTERIES, SYMPOSIA), (*PRIMARY
BATTERIES, SYMPOSIA), (*SOLAR CELLS, SYMPOSIA), (*ENERGY
CONVERSION, POWER SUPPLIES), MEMBRANES, ION EXCHANGE,
BATTERY COMPONENTS, ELECTRIC BATTERIES, ELECTRODES,
GENERATORS, THERMOELECTRICITY, THERMIONIC CONVERTERS,
RADIOACTIVE ISOTOPES, ELECTRIC POWER PRODUCTION, NUCLEAR
REACTORS, AUXILIARY POWER PLANTS, SPACEBORNE, ALKALINE
BATTERIES, INVERTERS, DC TO DC CONVERTERS (U)
IDENTIFIERS: *NICKEL CADMIUM BATTERIES, *REGENERATIVE
FUEL CELLS, *SILVER CADMIUM CELLS, *SILVER ZINC
BATTERY CELLS, *THERMOELECTRIC POWER GENERATION (U)

Topic included are: Fuel cell materials and
mechanisms; Fuel cell batteries and systems;
Thermal energy conversion; Solar energy
conversion; Secondary batteries; Primary
batteries; Electrical to electrical energy
conversion. (U)

AD- 696 421

UNCLASSIFIED

PAGE

97

AD- 692 635

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 692 635 14/2 20/13

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

INSTALLATION FOR HIGH-TEMPERATURE INVESTIGATIONS
OF HEAT-RESISTANT AVIATION MATERIALS AND COATINGS.

(U)

JUN 69 15P Pasichnyi, V. V. ;Dvernyakov,
V. S. ;
REPT. NO. FTD-MT-24-504-68

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited machine trans. of
Samoletoostroenie i Tekhnika Vozdushnogo Flota
(USSR) n10 p77-83 1967.

DESCRIPTORS: (*SOLAR FURNACES, HIGH TEMPERATURE), (*HEAT
RESISTANT MATERIALS, TEST METHODS), HEAT FLUX,
MEASUREMENT, CONTROL SYSTEMS, MODEL TESTS, PYROMETERS,
REFRACTORY COATINGS, AVIATION, DESIGN, USSR
IDENTIFIERS: AVIATION, TRANSLATIONS (U)

Helioapparatus and the method for and results of
determining the thermal parameters of aviation
materials are described. The apparatus produces a
temperature of up to 1500-2000C, which is measured
with great accuracy by thermocouples. Radiation is
measured with an AT-50 actinometer and a GSA-1
galvanometer. The redistribution of thermal-flux
density in the focal zone is analyzed when the
temperature is controlled by a shielding cylinder and
by defocusing. Strict determination of the thermal
flux incident on the specimen and its distribution
over the heating area is found to be important. The
apparatus allows experiments to be made under very
pure conditions and at easily controllable
temperatures and thermal fluxes. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 686 496 10/2 20/12
GENERAL DYNAMICS/ASTRONAUTICS SAN DIEGO CALIF
PHOTOVOLTAIC AND THERMOELECTRIC SOLAR ENERGY
CONVERSION USING THIN FILMS, (U)

DEC 61 65P Zimmerman, W. B. ; Evans, J.
C. , Jr;
REPT. NO. GDA-ERR-AN-103

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOLAR CELLS, FILMS), PHOTOELECTRIC
EFFECT, SEE-ECK EFFECT, SILICON, SEMICONDUCTORS, BAND
THEORY OF SOLIDS, CADMIUM SULFIDES, DEPOSITION (U)
IDENTIFIERS: THIN FILMS (U)

Solar energy conversion by the use of thin films in
photovoltaic and thermoelectric devices is discussed.
Experimental work is presented on the fabrication
of a thin film cadmium sulfide cell which utilizes
the photovoltaic effect. A theoretical
investigation is made of the temperature differences
obtainable in space by using thin, light-weight
plastic sheets, and the use of such plastics for
thermoelectric generators is discussed.
Temperature differences of several hundred
centigrade degrees can be obtained. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 681 757 10/1 7/5
GENERAL DYNAMICS/ASTRONAUTICS SAN DIEGO CALIF
CHEMICAL PHOTOGENERATIVE SOLAR CONVERTER
EFFICIENCY, (U)

JAN 61 22P Neu, John T. ;
REPT. NO. GDA-ERR-AN-035

UNCLASSIFIED REPORT

DESCRIPTORS: (*PHOTOLYSIS, EFFICIENCY), (*SOLAR
RADIATION, ENERGY CONVERSION), THEORY, BROMIDES,
HYDROGEN COMPOUNDS, FREE RADICALS, MOLECULAR ENERGY
LEVELS, SOLAR CELLS, FUEL CELLS (U)
IDENTIFIERS: HYDROGEN BROMIDE, PHOTOVOLTAIC CELLS,
QUANTUM EFFICIENCY (U)

Systems have been studied which use a chemical
working fluid to absorb solar energy and convert it
to chemical energy for recovery as electrical energy
from electric cells. There is a possibility of
attaining the above objectives with a
photoregenerative system. A method for simply
calculating the quantum yield is given with
suggestions for improving efficiency. A suggested
research approach is presented. (U)

AD- 686 4 8

UNCLASSIFIED

PAGE

98

AD- 681 757

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 672 772 10/3 10/2 18/14 22/2
NAVY SPACE SYSTEMS ACTIVITY LOS ANGELES CALIF

SPACE POWER SUPPLY STUDY. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 68 178P Silverman, Richard V. ;
REPT. NO. NSSA-R40-68-5

UNCLASSIFIED REPORT

DESCRIPTORS: (*SATELLITES(ARTIFICIAL), *POWER SUPPLIES,
FUEL CELLS, SOLAR CELLS, BATTERY COMPONENTS, ELECTRIC
BATTERIES, RADIOACTIVE ISOTOPIES, THERMOELECTRICITY,
WEIGHT, COSTS, RELIABILITY, ANALYSIS (U)

This report presents the results of a parametric analysis, evaluation and comparison of space electrical power systems capable of meeting a set of mission requirements. The parameters include: continuous power (300 or 600 W), peak power (2, 3.5 or 5 kW), duty cycle (5%, 10% or 20%) and mission duration (1 to 12 months). The spacecraft is defined to be in a low circular polar orbit and the power systems are to be available in the 1970-1973 time frame. Six types of power systems (solar cell/battery, fuel cell, fuel cell/battery, solar cell/battery/fuel cell, solar cell/fuel cell, and radioisotope thermoelectric generators/battery) were evaluated for possible application to such missions. Evaluation and comparison criteria include mass, volume, procurement costs, reliability and spacecraft integration factors. (Author)

(U)

AD- 672 772

UNCLASSIFIED

PAGE

99

AD- 669 994

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 669 994 10/2 10/3 22/2
JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS
LAB

DODGE SATELLITE POWER SYSTEM. (U)

DESCRIPTIVE NOTE: Technical memo.,
MAY 68 39P Wilson, Louis ;
REPT. NO. APL-TG-978
CONTRACT: N0W-62-0604

UNCLASSIFIED REPORT

DESCRIPTORS: (*SCIENTIFIC SATELLITES, ELECTRIC POWER
PRODUCTION), (*SOLAR CELLS, *STORAGE BATTERIES),
GRAVITY, STABILIZATION, DAMPING, MAGNETIC FIELDS,
HYSTERESIS, INVERTERS, DC TO DC CONVERTERS, VOLTAGE,
ELECTRIC CURRENTS, ATTITUDE CONTROL SYSTEMS, DIAGRAMS,
POWER SUPPLIES (U)
IDENTIFIERS: DEPARTMENT OF DEFENSE GRAVITY EXPERIMENT,
DODGE(DEPARTMENT OF DEFENSE GRAVITY EXPERIMENT), DODGE
SATELLITE (U)

The DODGE (Department of Defense Gravity Experiment) satellite was launched on July 1, 1967 to an altitude of 18,000 statute miles into a near-synchronous orbit. The satellite was designed, as an experiment to demonstrate two- and three-axis gravity-gradient stabilization using magnetic and hysteresis damping techniques. A solar cell/battery power system furnishes all of the electrical energy required to operate the satellite subsystems. The solar power generating capability is 45 watts (average). A 6-ampere-hour 10-volt nickel-cadmium battery operates peak electrical loads during light and dark orbits as required. DC-to-AC inverters and DC-to-DC converters transform the solar/battery voltage to the proper levels required to operate the on-board electrical loads. The power system contains protective devices for safeguarding the battery against excessive discharge currents and charging voltages. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 668 263 10/1 10/2 21/3
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

DIRECT CONVERSION OF VARIOUS FORMS OF ENERGY INTO
ELECTRIC AND MECHANICAL POWER. (U)

JUL 67 270P Alekseev, G. N. ;
REPT. NO. FTD-MT-64-355

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited machine trans. of mono.
Neposredstvennoe Prevrashchenie Razlichnykh vidov
Energii v Elektricheskuyu Mekhanicheskuyu, Moscow/
Leningrad, 1963 336p.

DESCRIPTORS: (*ENERGY CONVERSION, REVIEWS), POWER
SUPPLIES, BATTERY COMPONENTS, ELECTRIC BATTERIES, FUEL
CELLS, THERMOELECTRICITY, GENERATORS, THERMIONIC
CONVERTERS, PLASMA GENERATORS, MAGNETOHYDRODYNAMIC
GENERATORS, ELECTRIC PROPULSION, RADIOACTIVE ISOTOPES,
ELECTRIC POWER PRODUCTION, NUCLEAR REACTORS, NUCLEAR
PROPULSION, THERMONUCLEAR REACTIONS, SOLAR CELLS, SOLAR
SAILS, USSR (U)

IDENTIFIERS: PHOTON ROCKETS, RADIOISOTOPE GENERATORS, (U)
TRANSLATIONS

Contents: Direct conversion of chemical energy
to electrical energy (Theory of fuel cells, Fuel
cells with solid fuel, Fuel cells with gaseous
fuel, Combined (solid-gas) fuel cells, Fuel
cells with liquid fuel, Oxidizing reducing cells,
Possibilities of application of fuel cells);
Direct transformation of thermal energy into
electrical and mechanical energy (Thermoelectric
generators, Vacuum thermionic emission electric
generators, Gas-filled thermionic emission electric
generators, Plasma thermionic emission electric
generators, Certain general questions for
thermionic electric generators, Information on
magnetohydrodynamics, Magnetohydrodynamic electric
generators, Electrorocket motors); Direct
transformation of nuclear energy into electrical and
mechanical energy (Radioisotope electric
generators, Nuclear radioisotope motors, Nuclear
reactor electric generators, Nuclear reactor
motors, Thermoelectric generators,
Thermoelectric motors); Direct transformation of
solar energy into electrical and mechanical energy
(Solar electric generators, Solar sail, Photon
rocket motor). (U)

AD- 668 263

UNCLASSIFIED

PAGE

100

AD- 668 144

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 668 144 10/2 22/2 18/5
JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS
LAB

SOLAR CELL POWER SYSTEMS FOR APL SATELLITES. (U)

DESCRIPTIVE NOTE: Technical memo.,
FEB 68 33P Fischell, Robert E. ;
REPT. NO. APL-TG-950
CONTRACT: N0W-62-0604

UNCLASSIFIED REPORT

DESCRIPTORS: (*SATELLITES(ARTIFICIAL), *SOLAR CELLS),
(*ELECTRIC POWER PRODUCTION, SATELLITES(ARTIFICIAL)),
POWER SUPPLIES, PERFORMANCE(ENGINEERING),
RELIABILITY(ELECTRONICS), BATTERY COMPONENTS, ELECTRIC
BATTERIES, TEMPERATURE, VOLTAGE, NUCLEAR POWER PLANTS,
THERMOELECTRICITY, AUXILIARY POWER PLANTS, PLUTONIUM,
SEMICONDUCTOR DIODES, ATTITUDE CONTROL SYSTEMS, DC TO AC
CONVERTERS, DIAGRAMS, SOLDERING (U)
IDENTIFIERS: SNAP 3 (U)

Since 1959, the Applied Physics Laboratory
has designed and launched 31 earth satellites.
From very simple, low-power design in 1959, there
have developed much more sophisticated solar cell
power systems that generate higher power levels.
This paper describes the development of various
power systems and the application of several control
techniques for improving satellite operating
performance and reliability. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 654 285 10/2 22/2
AEROSPACE CORP EL SEGUNDO CALIF LABS DIV

SOLAR CELL POWER SYSTEMS FOR AIR FORCE SATELLITES, (U)

MAY 67 34P Stofel, Edwin J. ;
REPT. NO. TR-1001(2250-20)-7
CONTRACT: AF 04(695)-1001
MONITOR: SSD TR-67-89

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOLAR CELLS, *POWER),
(*SATELLITES(ARTIFICIAL), *SOLAR PANELS), POWER
SUPPLIES, SPACEBORNE, QUALITY CONTROL, TESTS, DESIGN (U)

The U.S. Air Force has used solar cell power systems on various types of satellites. The current methods used for choosing the array, the number of cells, their placement on the solar panels, and the quality assurance tests conducted on the panels are discussed. (Author)

(U)

AD- 654 285

UNCLASSIFIED

PAGE

101

AD- 653 184

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 653 184 10/2
LIBRARY OF CONGRESS WASHINGTON D C AEROSPACE TECHNOLOGY
DIVDIRECT ENERGY CONVERSION IN THE USSR, SOVIET SOLAR
CONCENTRATORS: COMPREHENSIVE REPORT, (U)NOV 66 142P Litynski, Z. ;
REPT. NO. ATD-66-138
MONITOR: IT 67-62078

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Rept. on Surveys of Foreign Scientific and Technical Literature.
DESCRIPTORS: (*SOLAR COLLECTORS, USSR), SOLAR RADIATION, ENERGY CONVERSION, SOLAR FURNACES, CONFIGURATION, OPTICAL EQUIPMENT, POWER SUPPLIES, THERMOELECTRICITY, PARABOLIC BOWIES, PHOTOELECTRIC EFFECT, THERMIONIC CONVERTERS, SOLAR PANELS, CONSTRUCTION MATERIALS, COATINGS, REVIEWS (U)

Contents: Theoretical considerations (Basic calculations of an ideal system, Calculations of a real concentrator, Attainable temperatures, Precision index, Cavity calculations); Concentrator design (Paraboloids, Multimirror systems, Parabolic-cylindrical concentrators, Other geometries); Concentrators for direct energy conversion (Concentrators for applications in space, Photovoltaic systems, Thermoelectric systems); Materials and manufacturing processes (Glass and aluminum, Reinforced concrete shells, Asbestos-cements, resins, and foam materials, Elastic membranes).

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 652 752 20/2 10/1
AVCO CORP WILMINGTON MASS AVCO SPACE SYSTEMS DIV
THORIA SINGLE CRYSTALS GROWN BY VAPOR DEPOSITION IN A SOLAR FURNACE, (U)

JUL 66 13P Laszio,T. S. ;Shuehan,P.
J. ;Gannon,R. E. ;
CONTRACT: AF 49(638)-1166
PROJ: AF-9763
TASK: 976301
MONITOR: AFOSR 67-1139

UNCLASSIFIED REPORT

Availability: Published in J. Phys. Chem.
Solids v28 p313-6 1967.

DESCRIPTORS: (*THORIUM COMPOUNDS, CRYSTAL GROWTH),
(*CRYSTAL GROWTH, *SOLAR FURNACES), DIOXIDES, SINGLE
CRYSTALS, VAPOR PLATING, DENDRITIC STRUCTURE, X RAY
DIFFRACTION, CRYSTAL LATTICES (U)
IDENTIFIERS: THORIUM(IV) OXIDE (U)

A solar furnace capable of heat fluxes corresponding to a blackbody temperature as high as 4900K was successfully used to grow ThO₂ crystals from the vapor phase. This was accomplished by heating a small area of a polycrystalline ThO₂ rod to temperatures well above its melting point until profuse vaporization was observed. The vapors condensed around the molten crater forming single crystals with well defined crystal habits as well as clearly defined dendrites. The preferred directions of growth were determined by X-ray diffraction analysis. This crystal growing technique also yields crystals of very high purity since the process involves a fractional condensation. The experimental technique and apparatus is described in detail. Laue diagrams of the single crystals and lattice parameters obtained from the powder pattern are also given. (Author) (U)

AD- 652 752

UNCLASSIFIED

PAGE

102

AD- 648 011

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 648 011 20/13 22/1
HUGHES AIRCRAFT CO EL SEGUNDO CALIF SPACE SYSTEMS DIV
LOCAL RADIATION EQUILIBRIUM TEMPERATURES IN SEMIGRAY ENCLOSURES. (U)

DESCRIPTIVE NOTE: Aerospace technology research rept.,
DEC 66 15P Bobco,R. P. ;Allen,G. E.
;Othmer,P. W. ;
REPT. NO. RR-17, SSD-60475R

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPACECRAFT, THERMAL PROPERTIES), (*SOLAR RADIATION, INTEGRAL EQUATIONS), (*THERMAL RADIATION, INTEGRAL EQUATIONS), THERMODYNAMICS, REFLECTION, TEMPERATURE, APPROXIMATION(MATHEMATICS), HEAT TRANSFER (U)

A rigorous analytical formulation is derived for computing local radiation equilibrium temperatures in diffusely reflecting, semigray cavities. Radiosity integral equations for solar and thermal radiation are related through a heat balance to obtain a third integral equation for the temperature distribution in an enclosure. The temperature equation is solved, in principle, by postulating a resolvent in terms of Fredholm's solution. The solution is reduced to an approximate formulation suitable for engineering applications by introducing a mean value for the integral and using Hottel's script eff in place of the resolvent. The resulting solution shows that local temperature depends on the sum of local direct solar energy, weighted diffusely reflected solar energy from other cavity regions, and weighted temperature of other regions. The analysis is completed by presenting closed-form expressions suitable for hand computation of mean temperatures in a semigray enclosure of two surfaces: (1) A concave surface which 'sees' itself (shape factor F11 not = 0) and (2) a plane surface (F22 = 0). Numerical results are given for an L-shape geometry and a shallow circular cavity to compare the solutions derived in the paper to those obtained by computer nodal analyses. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 629 241

10/2 10/1

WISCONSIN UNIV MADISON SOLAR ENERGY LAB

PHOTOVOLTAIC POWER SYSTEMS USING HIGH SOLAR ENERGY FLUXES.

(U)

DESCRIPTIVE NOTE: Final rept., 1 Mar 64-30 Nov 65,
DEC 65 73P Schoffer, P.; Beckman, W.;
CONTRACT: DA-28-043-AMC-00005(E),
PROJ: DA-1C6-22001-A-053,
TASK: 01,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-458 879.
DESCRIPTORS: (*SOLAR CELLS, ENERGY CONVERSION), (*ENERGY CONVERSION, SOLAR CELLS), (*POWER SUPPLIES, SOLAR CELLS), ELECTRIC POWER PRODUCTION, SILICON, REFLECTORS, COOLING + VENTILATING EQUIPMENT, HEAT, PERFORMANCE(ENGINEERING), EFFECTIVENESS, HEAT EXCHANGERS

(U)

Experimental data is presented on the operation of a high solar flux power system. Using 18 one by two cm cells with 20 gridlines/cm and with a concentrated solar flux of about 25 W/sq cm, the system produced 40 watts of electrical power. Approximately 5 of the 40 watts are necessary for the cooling system pump motor. The expected net output of 50 watts was not obtained due to low cell efficiencies and nonuniform flux distribution. Probable reasons for the low cell efficiencies are discussed and a method for obtaining a more uniform flux distribution is presented. Tests on the individual cooling system components are also presented. (Author)

(U)

AD- 629 241

UNCLASSIFIED

PAGE

103

AD- 614 023

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 614 023

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

EARTHLY SUN OBEY.

(U)

MAR 65 5P
REPT. NO. FT0-TT-64-1326
MONITOR: TT, 65-61995

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Unedited rough draft trans. from Izvestiya (USSR) n271 p 5 Nov 13 1964.
DESCRIPTORS: (*NUCLEAR PHYSICS, POWER SUPPLIES), (*MAGNETOHYDRODYNAMICS, ENERGY CONVERSION), LASERS, PLASMAS(PHYSICS), NUCLEAR REACTIONS, CONTROL, USSR

(U)

A popularized Russian newspaper article on the progress of controlled nuclear reactions as a power source is presented.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 607 425

ARMY ELECTRONICS LABS FORT MONMOUTH N J

PROCEEDINGS, ANNUAL POWER SOURCES CONFERENCE (14TH), (U)
17-19 MAY 1960.

MAY 60 162P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: This conference was formerly called The Battery Research and Development Conference. Legibility of this document is in part unsatisfactory. Reproduction has been made from best available copy.
DESCRIPTORS: (*BATTERIES AND COMPONENTS, SYMPOSIA), (*POWER SUPPLIES, SYMPOSIA), (*ELECTRIC POWER PRODUCTION, SYMPOSIA), ENERGY CONVERSION, SOLAR RADIATION, THERMAL RADIATION, FUEL CELLS, STORAGE BATTERIES, PRIMARY BATTERIES, ELECTROCHEMISTRY, REVIEWS (U)

Contents: Thermal Energy Conversion Solar Energy Conversion Fuel Cell Batteries Secondary Batteries Comparison Of Energy Conversion Systems Energy Storage Devices High Rate Batteries Primary Batteries (U)

AD- 607 425

UNCLASSIFIED

PAGE

104

AD- 431 557

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 431 557

GV DEFENSE RESEARCH LABS SANTA BARBARA CALIF

STUDY OF A THERMOPHOTOVOLTAIC CONVERTER. (U)

DESCRIPTIVE NOTE: Final rept., 1 Jan-31 Dec 63.

FEB 64 139P

REPT. NO. GW-DRL-TR64-15

CONTRACT: DA-36-039-ANC-02255(E)

PROJ: DA-1-3-64-209-D-534

TASK: 1-3-64-209-D-53410

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:
DESCRIPTORS: (*PHOTOELECTRIC CELLS (SEMICONDUCTOR), (*WATERPILLS), (*PHOTOELECTRIC MATERIALS, THERMOELECTRICITY), (*SOLAR RADIATION, ENERGY CONVERSION), (*THERMOELECTRICITY, SEMICONDUCTORS), (*ENERGY CONVERSION, PHOTOELECTRIC CELLS (SEMICONDUCTOR)), PORTABLE (HAND-PORTABLE), THERMAL CONDUCTION, GERMANIUM SILICON, ELECTRIC POWER PRODUCTION, REFLECTION, INEQUALITIES, ENERGY, HIGH TEMPERATURE RESEARCH, EMISSIVITY, GOLD, SILICON COMPOUNDS, CERAMICS, ANTIMONY ALLOYS, GALLIUM ALLOYS, INDIUM ALLOYS, ABSORPTION, ELECTRICAL PROPERTIES, ELECTRIC POTENTIAL, ELECTRIC CURRENTS, GONIOMETERS, INFRARED RADIATION, THEORY (U)

Components for a portable thermophotovoltaic energy converter have been investigated experimentally and theoretically. Using a newly designed reflectance goniometer, reflectance values were measured for specular front-surface gold-germanium (98.2%), for specular front-surface germanium and near-surface germanium gold coated (92.7%), and for a rougher scattering front-surface gold-germanium (97.4%). It appears that adequately transparent germanium cells can be made with a 4x long-wave length transmission loss per round trip, with acceptable front and back levels. Neither gallium antimonide nor indium arsenide shows promise as an alternative to germanium. For german mantle materials, SiC shows promise. The reflectance measurements on Cr-CrO₂ oxide-stained alumina indicate that the emissivity may be as high as 0.95; stained oxides may, therefore also be suitable. Design studies for a burner with 30% stack loss were completed. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 429 505

NORTHEASTERN UNIV BOSTON MASS

RESEARCH IN ENERGY CONVERSION.

(U)

DESCRIPTIVE NOTE: Final rept., 1 July 60-30 Sep 63.

NOV 63 304P

CONTRACT: AF 19(604)-7358

PROJ: AF-6692, AF-6694

TASK: 669204, 669402

MONITOR: AFCL 63-940

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*ENERGY CONVERSION, SCIENTIFIC RESEARCH),
(*SOLAR CELLS, SINGLE CRYSTALS), SILICON, CRYSTAL
GROWTH, VAPOR PLATING, PHOTOELECTRIC EFFECT,
PHOTOCHEMICAL REACTIONS, THERMOELECTRICITY, THERMIONIC
CONVERTERS, PLASMAS, (*SOLAR CELLS), NITROGEN COMPOUNDS, SULFUR
COMPOUNDS, SEMICONDUCTORS, ORGANIC SULFUR COMPOUNDS,
CHELATE COMPOUNDS, METALORGANIC COMPOUNDS, ELECTRICAL
PROPERTIES, ELECTRIC POWER PRODUCTION, SPACECRAFT,
OPTICAL PROPERTIES (U)

Research in energy conversion: photovoltaic,
thermoelectric, thermionic, and photochemical phenomena.

AD- 429 505

UNCLASSIFIED

PAGE

105

AD- 418 322

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 418 322

GENERAL INSTRUMENT CORP NEWARK N J

SOLAR FLAT PLATE THERMOELECTRIC GENERATOR
RESEARCH.

(U)

DESCRIPTIVE NOTE: Quarterly rept. no. 2, 1 June-1 Sep
63.

SEP 63 24P

CONTRACT: AF33 657 10335

PROJ: 8173

TASK: 817302

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOLAR PANELS, THERMOELECTRIC),
(*AUXILIARY POWER PLANTS, SPACECRAFT), DESIGN, OPTICAL
COATINGS, TEMPERATURE, STRUC, THERMOCOUPLES, ENERGY
CONVERSION, SOLAR RADIATION, METAL PLATES, PIPES,
ALUMINUM, NICKEL, THICKNESS, WEIGHT, SOLDERED JOINTS,
TESTS. (U)

A solar flat plate thermoelectric generator con-
sists of a collector plate with an optically
selective coating, small size semiconductor
thermoelements, a radiator plate and a support
structure. Emphasis has been placed on a support
structure concept designated as the integral
reinforced plate in which radiator and collector
plates are folded into self-supporting structures.
A number of thermal cycling tests have been con-
ducted up to a maximum of 2000 cycles. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 415 024

WESTINGHOUSE ELECTRIC CORP LIMA OHIO

SOLAR THERMOELECTRIC GENERATOR SYSTEM CONCEPT AND
FEASIBILITY STUDY. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 6, 15 May-15 Aug

63, AUG 63

23P

Naumer, D. A.; McCabria, J.

L. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*GENERATORS, SOLAR RADIATION), (*SOLAR RADIATION, GENERATORS), (*THERMOELECTRICITY, SOLAR RADIATION), DESIGN, FEASIBILITY STUDY, TESTS, LIFE EXPECTANCY, EXPERIMENTAL DATA, GAMMA RAYS, ELECTRIC POWER PRODUCTION, LITHIUM COMPOUNDS, HYDRIDES, MODELS (U)

Ground level - natural sunlight testing of the solar powered thermoelectric generator has been completed. Evaluation of the test data has shown that the short within the generator, which occurred during simulated altitude evaluation, has been repaired. Maximum power output obtained during solar testing was 20 watts. The waste heat radiator was operated at a lower temperature than would be encountered in a space atmosphere. The rate of heat input to the thermopile was therefore greater than that to be expected under space flight conditions. This shortened the cycle from 90 to 83.3 minutes. The integrated average for an 83.3 minute cycle is 17.82 watts or 24.8 watt hours output. The overall efficiency for the cycle is 3.55% including convection losses. Assuming the collector concentrator efficiency to be 86.6% the generator efficiency including reradiation but excluding convection losses from the vacity is 4.53%. (Author) (U)

AD- 415 024

UNCLASSIFIED

PAGE

106

AD- 410 932

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 410 932

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

ENERGY, ITS SOURCES ON EARTH AND ITS ORIGIN. PART
IV. (U)

MAY 63 105P

Lazarev, P. P.;

REPT. NO. FTD-TT-61-479

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. from Energiya, Yeye Istochniki Na Zemle ; Yeye Proiskhozhdeniye, IZD-VO AN SSSR, Moskva, pp. 195-276, 1959.
DESCRIPTORS: (*ENERGY, SOURCES), (*MASS-ENERGY, SOLAR SYSTEM), (*NUCLEAR ENERGY, RESONANCE ABSORPTION), PHYSICS, ASTROPHYSICS, BIOPHYSICS, SOLAR FLARES, SOLAR RADIATION, WIND, FUELS, ENERGY CONVERSION, ELECTRIC POWER PRO, NUCLEAR REACTORS, PROTONS, NUCLEONS. (U)

Energy sources on earth.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 409 001

TEXTRON ELECTRONICS INC SYLMAR CALIF HELIOTEK DIV

HIGH EFFICIENCY SILICON SOLAR CELLS. (U)

DESCRIPTIVE NOTE: Quarterly progress rept. no. 3, 15 Dec
62 15 Mar 63, 1V

Berman, Paul A.; Handy,

Roland J.; Rolik, Geza P.;

CONTRACT: DA36 039sc90777

PROJ: JA99 09 002

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOLAR CELLS, ELECTRICAL PROP), (*SOLAR
RADIATION, INTENSITY), RESIST, SILICON, DESIGN, THEORY,
MEASUREMENT, ELECTRIC CURRENTS, MIRRORS, ELEC,
MATHEMATICAL PREDICTION, EQUATIONS. (U)

An additional mirror was added to the solar con-
centrator equipment so that it is possible to make
solar cell measurements at approximately 5 gm-
calories/sq cm/min solar intensity. The
concentrator was used to verify the sunlight power
predictions made from tungsten power measurements
during the P()/N bivariable experiment. A
generalization was developed for the theoretical
determination of the total cell series resistance
from a knowledge of the values of the component
resistances. The equations were utilized to
predict the series resistance of production type
N()/P and N()/N cells. (Author)

AD- 409 001

UNCLASSIFIED

PAGE 107

AD- 299 207

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 299 207

JOINT PUBLICATIONS RESEARCH SERVICE WASHINGTON D C

SOLAR ELECTRIC POWER STATIONS (U)

DEC 62 1V SOMINSKII, M.S.;

REPT. NO. 16683

UNCLASSIFIED REPORT

DESCRIPTORS: *ELECTRIC POWER PRODUCTION, *PHOTOELECTRIC
CELLS (SEMICONDUCTOR), *SOLAR CELLS, BATTERY COMPONENTS,
ELECTRIC BATTERIES, ENERGY, SILICON, SOLAR RADIATION (U)
IDENTIFIERS: TRANSLATIONS (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 299 004

TAPCO DIV THOMPSON RAMO WOOLDRIDGE INC INGLEWOOD
CALIFLONG-LIFE THERMIONIC CONVERTERS FOR SOLAR POWER
SYSTEMS

(U)

FEB 63 1V

CONTRACT: AF33 616 8114

MONITOR: ASD TDR62 1069

UNCLASSIFIED REPORT

DESCRIPTORS: *ELECTRIC POWER PRODUCTION, *THERMIONIC
EMISSION, CESIUM, DESIGN, EFFECTIVENESS, ELECTRIC
POTENTIAL, FAILURE (MECHANICS), INSTRUMENTATION, LIFE
EXPECTANCY, SOLAR CELLS, SPACE ENVIRONMENTS,
TEMPERATURE, TEST FACILITIES, TEST METHODS, THERMIONIC
CONVERTERS (U)
IDENTIFIERS: SOLAR GENERATORS (M)

LONG-LIFE THERMIONIC CONVERTERS FOR SOLAR POWER SYSTEMS.
EFFORTS ARE DIRECTED TOWARDS INCREASING THE LIFE
CYCLE OF SOLAR THERMIONIC GENERATORS. SPECIALIZED
EQUIPMENT, TECHNIQUES, AND DESIGN DETAILS ARE
PRESENTED.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 294 000

WESTINGHOUSE ELECTRIC CORP BALTIMORE MD

PHOTOEMISSIVE ENERGY CONVERSION APPLIED RESEARCH
PROGRAM

(U)

DEC 62 1V

REPT. NO. TDR62 10211183A

CONTRACT: AF33 657 7865

MONITOR: ASD TDR62 1021

UNCLASSIFIED REPORT

DESCRIPTORS: *POWER SUPPLIES, DESIGN, ELECTRIC POWER
PRODUCTION, ENERGY CONVERSION, FEASIBILITY STUDIES,
PHOTOELECTRIC EFFECT, SOLAR RADIATION, THEORY (U)

THE FEASIBILITY WAS STUDIED OF MAKING A CLOSESPACED,
GLASS-SANDWICH PHOTOEMISSIVE SOLAR POWER CONVERTER.
IT WAS NOT POSSIBLE TO MAKE OPERABLE SEALED-OFF
CONVERTERS IN THE LABORATORY DUE TO THE DIFFICULTY OF
SEALING WITHIN A VACUUM SYSTEM AND THE PARTICULAR
CONFIGURATION OF THE DEVICE GIVING A LARGE VALUE OF
SURFACE-TO-VOLUME RATIO. THE REQUIREMENT OF A LOW
WORKFUNCTION SURFACE FOR THE ANODE WAS VERIFIED BY A
TEST INVOLVING CHANGING THE INTERELECTRODE SPACING OF
A CONVERTER IN SITU WITHIN THE PROCESSING SYSTEM.
CONVERTER ACTION WAS OBTAINED WITH A SPACING OVER AN
INCH, BUT DECREASED WITH SPACING. IT WAS NOTED THAT
AT CLOSER SPACINGS THE OUTPUT POWER INCREASES AND THE
INTERNAL RESISTANCE DECREASES. CONSIDERATION OF THE
SUBSEQUENT INVENTION AND DEMONSTRATION OF THE CADMIUM
SULPHIDE SOLAR POWER CONVERTER AT RELATIVELY HIGH
CONVERSION EFFICIENCIES AND IN A THIN, FLEXIBLE,
POLYCRYSTALLINE FILM FORM LEADS TO THE CONCLUSION
THAT THE PHOTOEMISSIVE CONVERTER IS NO LONGER
COMPETITIVE (U)

AD- 299 004

UNCLASSIFIED

PAGE

108

AD- 294 000

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 288 650
NATIONAL RESEARCH CORP CAMBRIDGE MASS

DEVELOPMENT OF A PHOTOEMISSIVE SOLAR ENERGY
CONVERTER

(U)

SEP 62 1V FOWLER, PETER; KOLLER, LEWIS R; SCHRANK,

MARTIN P.;

REPT. NO. TDR62 600

CONTRACT: AF33 616 8145

MONITOR: ASD TDR62 600

UNCLASSIFIED REPORT

DESCRIPTORS: *ELECTRIC POWER PRODUCTION, *SATURABLE
REACTORS, *SOLAR RADIATION, DIELECTRICS, ETHYLENES, SUN,
PHthalATES, SIMULATION, SOLAR CELLS, SPACE FLIGHT, SUN,
WORK FUNCTIONS (U)

DEVELOPMENT OF A PHOTOEMISSIVE SOLAR ENERGY CONVERTER.

AD- 288 650

UNCLASSIFIED

PAGE 109

AD- 286 573

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 286 578

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

SOLAR BATTERIES OF THE FUTURE

(U)

SEP 62 1V KOLTUN, M.;

REPT. NO. IT 62 972

UNCLASSIFIED REPORT

DESCRIPTORS: *FUEL CELLS, *POWER SUPPLIES, *SOLAR CELLS,
*SOLAR RADIATION, INTERMETALLIC COMPOUNDS, PHOTOELECTRIC
CELLS (SEMICONDUCTOR), PHOTOTUBES, SILICON (U)

The conversion of helioenergetics into an
independent and important technological field is
discussed. Outstanding scientists of the world,
including Frederic Joliot-Curie, feel that
helioenergetics will be put on an equal footing with
the study of atomic energy. In this connection
scientists await further research. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 285 084

DEPUTY COMMANDER AEROSPACE SYSTEMS INGLEWOOD CALIF

ENERGY CONVERSION RESEARCH PROGRAM. DIRECT CONVERSION
OF CHEMICAL ENERGY TO ELECTRICAL ENERGY (U)

AUG 62 1V HESS, F.D.; MAYER, S.W.;
 REPT. NO. TOR62 164
 CONTRACT: AF04 695 69
 MONITOR: DCAS TOR62 164

UNCLASSIFIED REPORT

DESCRIPTORS: *FUEL CELLS, *POWER SUPPLIES, *SOLAR CELLS,
 ACETAMIDES, ANTIMONY COMPOUNDS, CHLORIDES, CHLORINE,
 DIELECTRIC PROPERTIES, ELECTRIC POTENTIAL,
 ELECTROCHEMISTRY, ELECTRODES, ENERGY CONVERSION, METHYL
 RADICALS, ORGANIC SOLVENTS, OXIDATION, PHOSPHORUS
 COMPOUNDS, REACTION KINETICS, TUNGSTEN COMPOUNDS (U)
 IDENTIFIERS: METHYL RADICALS (M)

Prototype fuel cells were operated employing
 chlorine as oxidant, phosphorus trichloride as fuel,
 and methyl thiocyanate as solvent. Studies were
 made of pyrolytic processes for regeneration of
 reaction products and means of separating products.
 Other systems were investigated by
 chronopotentiometric techniques. Tungsten and
 antimony chlorides were found to have characteristics
 of special interest. (Author) (U)

AD- 285 084

UNCLASSIFIED

PAGE

110

AD- 282 213

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 282 213

GENERAL DYNAMICS SAN DIEGO CALIF GENERAL ATOMIC DIV

FLAT-PLATE SOLAR THERMOELECTRIC CONVERSION
PANELS. (U)

DESCRIPTIVE NOTE: Final rept., Nov 60-Dec 61,
 MAY 62 47P Himle, Arthur N.; Brush,
 Daniel S.;
 REPT. NO. TOR62 214
 CONTRACT: AF33 616 7676
 PROJ: 8173
 MONITOR: ASD TOR62 214

UNCLASSIFIED REPORT

DESCRIPTORS: (*THERMOELECTRICITY), (*POWER SUPPLIES),
 (*SANDWICH PANELS), ALUMINUM, LEAD COMPOUNDS,
 TELLURIDES, ZINC COMPOUNDS, ANTIMONIDES, SOLAR
 ENERGY (U)
 IDENTIFIERS: SOLAR ENERGY, ANTIMONIDES (M)

Procedures were developed for constructing a
 lightweight solar energy converter, using
 thermoelectric materials sandwiched between flat
 sheets of aluminum. Two panels, each one foot
 square, have been delivered to the Flight
 Accessories Laboratory, Aeronautical Systems
 Division. Each panel contains 153 n-type
 PbTe elements and 153 p-type ZnSb elements,
 arranged in eighteen alternating rows of seventeen
 elements each. According to measurements made on
 test panels constructed in a similar fashion, the
 delivered panels are capable of an output of at least
 1.33 w/sq ft when subjected to an incident energy of
 1400 w/sq m, which is equal to the solar energy
 intensity at the Earth's distance from the sun.
 At this output, the solar panel weight 95 pounds
 per electrica kilowatt. The observed output is
 lower than is calculated from the properties of the
 materials used; however, it is anticipated that
 improved performance can be obtained in future
 panels. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMQ9

AD- 274 922

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE
DIV

TEMPERATURE CONTROL TECHNIQUE FOR SOLAR ENERGY
CONVERTERS

(U)

DESCRIPTIVE NOTE: Final rept.

FEB 62 189P BAKER, JOEL K.;

CONTRACT: AF33 616 7889

PROJ: AF-3134

TASK: 60959

MONITOR: ASD TR61 689

UNCLASSIFIED REPORT

DESCRIPTORS: *ELECTRIC POWER PRODUCTION, *SOLAR CELLS,
*SOLAR RADIATION, ARSENIDES, COATINGS, GALLIUM
COMPOUNDS, MEASUREMENT, POWER SUPPLIES, SATELLITES
(ARTIFICIAL), SILICON, SPACECRAFT, TEMPERATURE
CONTROL

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMQ9

AD- 273 551

GOODYEAR AEROSPACE CORP AKRON OHIO

SOLAR ORIENTING DEVICE FOR EXPANDABLE FLAT-PANEL
ARRAY

(U)

JAN 62 1V MCKEEL, G.J.;

UNCLASSIFIED REPORT

DESCRIPTORS: *ELECTRIC POWER PRODUCTION, *SOLAR CELLS,
DESIGN, DETECTION, ENERGY CONVERSION, FEASIBILITY
STUDIES, FOCUSING, POWER SUPPLIES, ROTATING STRUCTURES,
SENSITIVITY, SOLAR RADIATION, SUN, TESTS, THERMAL
RADIATION, TRACKING

(U)

IDENTIFIERS: ROTATING STRUCTURES

(M)

The effects of solar declination change on the total angular error of the array and the position for mounting the sun sensor are treated. Curves of total angular error versus declination change for various values of the tracking drive error are presented. An example is outlined for calculating the possible period of unattended operation of the solar orienting device and its array for a particular set of initial conditions which contain a constant declination value. The tracking rate for the array is examined to obtain an insight into some of the important parameters affecting its operation. The requirements for automatic declination control applicable to the solar orienting device were examined, and a feasible approach to the sensor is presented. A circuit diagram illustrates the additional hardware needed for two-axis automatic control. Sensor modification is discussed for the purpose of removing the dead zone which, under certain tracking conditions, can occur. Experimental results gained from the breadboard model of the mount and drive unit are given, and the sun sensor accuracy is also obtained. Photographs of the breadboard mount and sun sensor are included.

(U)

AD- 274 922

UNCLASSIFIED

PAGE

111

AD- 273 551

UNCLASSIFIED

ZOMQ9

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 271 829

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

A MOTOR CONNECTED TO THE SUN

FEB 62 1V YEFIMOV, YE.;

REPT. NO. TT 61 399

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: *SOLAR CELLS, ELECTRIC POWER PRODUCTION, ENERGY CONVERSION, POWER SUPPLIES, SOLAR RADIATION, THERMAL RADIATION, THERMOELECTRICITY (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 267 330

TRW INC CLEVELAND OHIO

DESIGN STUDY FOR ADVANCED SOLAR THERMIONIC POWER SYSTEMS. ITEM II. PART I. VAPOR TYPE THERMIONIC GENERATOR

(U)

SEP 60 1V

UNCLASSIFIED REPORT

DESCRIPTORS: *SOLAR CELLS, THERMIONIC EMISSION, CESIUM, DESIGN, ELECTRIC POWER PRODUCTION, ENERGY CONVERSION, GENERATORS, PLASMA(Physics), POWER SUPPLIES, SOLAR RADIATION, THERMIONIC CONVERTERS, THERMOELECTRICITY, VAPORS (U)

A survey of the state of the art of thermionic power generation was carried out as part of a design study for advanced solar thermionic power systems. The results are reported and serve as a basis for the preparation of a detailed design and test specification for two laboratory test models of thermionic generators. Part I of the report pertains to the Vapor Type Thermionic Generator, and Part II (AD-260 066) pertains to the Close-Spaced Vacuum Thermionic Generator. Part I describes the results of a design study on vapor type thermionic converters and establishes the design and test specifications for a laboratory test model Cs thermionic converter. The unit is rated at 28 volts, 250 watts electrical power output and consists of 2 identical Cs converters connected in series. The series combination voltage of 2.8 volts is converted to the specified 28 volts by an 80% efficient d-dc transistorized converter. The gross power output from each Cs converter is 156 watts. (U)

AD- 271 829

UNCLASSIFIED

PAGE 112

AD- 267 330

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 264 989

ELECTRO-OPTICAL SYSTEMS INC PASADENA CALIF

INVESTIGATION OF SOLAR CONCENTRATING PHOTOVOLTAIC
POWER GENERATORS (U)

MAY 61 1V MCCLELLAND, DONALD H.;
 REPT. NO. 530 1R 1
 CONTRACT: AF33 616 7346
 MONITOR: ASD TR60 849

UNCLASSIFIED REPORT

DESCRIPTORS: *ELECTRIC POWER PRODUCTION, *MIRRORS
 *PHOTOELECTRIC CELLS (SEMICONDUCTOR), *PHOTOTUBES,
 *REFLECTORS, *SOLAR CELLS, ANALYSIS, DESIGN,
 ELECTROMAGNETIC PROPERTIES, ERRORS, MATERIALS,
 MATHEMATICAL ANALYSIS, METAL FILMS, OPTICS, PLASTIC
 COATINGS, REFLECTION, SOLAR RADIATION (U)

The results are presented of Phase I of a program to study and evaluate the use of concentration with photovoltaic power generators. The program is divided into 3 parts: (1) Preliminary investigation of all factors relating to the use of concentration with photovoltaic power generators; (2) Technical analysis of photovoltaic power generators in the power range from 500 to 1500 watts; and (3) Design, fabrication, and test of a 50-watt scale model of the 1500 watt power system. It was concluded from the work conducted to date that the use of concentration with photovoltaic power systems has important advantages at the present time and will become even more useful in the near future as better solar cell filters and fabrication techniques are developed.
 (Author)

(U)

AD- 264 989

UNCLASSIFIED

PAGE

113

AD- 264 828

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 264 828

WESTINGHOUSE ELECTRIC CORP BALTIMORE MD

PHOTOEMISSION SOLAR ENERGY CONVERTER (U)

JUL 60 1V
 REPT. NO. 3845 2
 CONTRACT: DA36 039SC85248
 MONITOR: ARPA 80 59

UNCLASSIFIED REPORT

DESCRIPTORS: *ELECTRIC POWER PRODUCTION, *SOLAR CELLS,
 DESIGN, ELECTRODES, ELECTRON OPTICS, GENERATORS,
 PHOTOELECTRIC CELLS (SEMICONDUCTOR), PHOTOELECTRIC
 EFFECT, PHOTOTUBES, PROCESSING, SOLAR RADIATION, SPACE
 FLIGHT, TESTS (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 263 905

NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF

UNFUELED POWER SUPPLY FOR ISOLATED BASES ON SEA ICE (U)

OCT 61 19P TERRY,C.W.:

REPT. NO. NCEL-TR-163

PROJ: Y-R011-01-031

UNCLASSIFIED REPORT

DESCRIPTORS: *POLAR REGIONS, *POWER SUPPLIES, AIR, ELECTRIC POWER PRODUCTION, FEASIBILITY STUDIES, GENERATORS, ICE ISLANDS, NAVAL SHORE FACILITIES, SEA WATER, SOLAR CELLS, TEMPERATURE, TEST EQUIPMENT, TESTS, THERMOELECTRICITY, WIND (U)

The feasibility of an unfueled power supply for use at isolated bases on sea ice was considered. Three sources of power which do not require fuel were investigated to determine whether their use might be practical: (1) the temperature differential between the water under sea ice and the air above the ice, (2) wind-driven generators, and (3) solar energy cells. A review of theory AND THE RESULTS OF A LABORATORY TEST SHOWED THAT A DEVICE DEPENDING ON TEMPERATURE DIFFERENTIAL IS NOT A PRACTICAL ANSWER BECAUSE OF ICE FORMATION ON THE EVAPORATOR. A literature search showed that windmills have been used satisfactorily under somewhat similar circumstances; it appears that they would give adequate power for at least part of the bases under consideration. The literature search also showed that solar energy cells should operate satisfactorily during the seasons having long hours of sunlight. A further study of these two possibilities is recommended. (Author)

(U)

AD- 263 905

UNCLASSIFIED

PAGE

114

AD- 257 788

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 257 788

ELECTRO-OPTICAL SYSTEMS INC PASADENA CALIF

ENERGY CONVERSION SYSTEMS REFERENCE HANDBOOK. VOLUME V. DIRECT SOLAR CONVERSION (U)

SEP 60 1V EVANS,W.:MENETREY,W.R.:

REPT. NO. 390 F V5

CONTRACT: AF33 616 6791

UNCLASSIFIED REPORT

DESCRIPTORS: *HANDBOOKS, *PHOTOELECTRIC CELLS (SEMICONDUCTOR), *PHOTOELECTRIC EFFECT, *PHOTOTUBES, *POWER SUPPLIES, *SOLAR CELLS, *SOLAR RADIATION, CONFIGURATION, COOLING, CRATERING, DESIGN, DIRECT CURRENT, EFFECTIVENESS, ELECTROMAGNETIC RADIATION, ENERGY CONVERSION, GENERATORS, GEOMETRY, MATERIALS, METEORITES, MIRRORS, PLASMA(Physics), PRODUCTION, SPACE ENVIRONMENTS, SPACE FLIGHT, TEMPERATURE CONTROL, THEORY, VAN ALLEN RADIATION BELT (U)

The performance characteristics are described of the photovoltaic converter when used to convert solar radiation directly to dc electrical energy.

Empirical and analytical relationships are derived which present expected efficiencies of conversion as a function of temperature, solar insolation.

*Photoelectric cells, plasma physics, Electro magnetic waves, Theory, Materials, Cratering, Configuration, Production, Open-ended Terms: Energy conversion. The performance

characteristics are described of the photovoltaic converter when used to convert solar radiation directly to dc electrical energy. Empirical and analytical relationships are derived which present expected efficiencies of conversion as a function of temperature, solar insolation, and other factors. The effects of environmental degradation due to meteoroids and the Van Allen belts are discussed. The present and anticipated state-of-the-art of fabrication techniques is presented, along with the advantages of using concentrating mechanisms for increasing the solar illumination level. A discussion is also included describing the state of the art and practical and theoretical limitations of the photo-emissive generator. It does not appear at present that the photo-emissive generator offers competition to the photovoltaic cell. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 257 495

TECHNICAL OPERATIONS INC BURLINGTON MASS

RESEARCH DETECTED TOWARD THE IMPROVEMENT OF THE
EFFICIENCY OF SILICON BATTERIES BY UTILIZATION OF
UNABSORBED PHOTONS (U)

MAY 61 1V
REPT. NO. B61 24
CONTRACT: AF19 604 7306
MONITOR: AFRCL 475

UNCLASSIFIED REPORT

DESCRIPTORS: *POWER SUPPLIES, *SILICON, *SOLAR CELLS,
ABSORPTION, COATINGS, DYES, EFFECTIVENESS, INFRARED
RADIATION, INSTRUMENTATION, PHOSPHORESCENT MATERIALS,
PHOTOGRAPHIC CHEMICALS, PHOTONS, REFLECTION,
SENSITIVITY, SOLAR RADIATION, SURFACES, TEST METHODS, (U)
ULTRAVIOLET RADIATION

Attempts were made to increase the power output of
Si solar cells by sensitizing the cells to those
regions in which they do not respond, (UV and IR)
and by increasing the absorption and efficiency of
the cells in the spectral regions in which they do
respond. Three methods were studied: (1)
coating the cell surface with phosphors which absorb
in the UV and blue region and fluoresced in the
region of response of the solar cell (0.45 to 1.0
microns) and with dye energy-transfer agents;
(2) applying antireflection coatings to the cell
surface for the region of response; and ()
applying dye sensitizers for the IR region.
Adsorption and response of Si solar cells was
optimized by industry in the region 0.45 to 1.0
angstroms. Sensitization of the cells by phosphors
in the UV region is feasible but the intensity of
fluorescence required to drive the cell appears to be
greater than that easily achieved by surface coating.
Neither sensitization by chemical sensitizers in
the UV region nor by dye sensitization in the IR
region appears to be possible. (U)

AD- 257 495

UNCLASSIFIED

PAGE

115

AD- 256 973

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 256 973

ELECTRO-OPTICAL SYSTEMS INC PASADENA CALIF

ENERGY CONVERSION SYSTEMS REFERENCE HANDBOOK. VOLUME
II, SOLAR-THERMAL ENERGY SOURCES (U)

SEP 60 1V
REPT. NO. 390 F V2
CONTRACT: AF33 616 6791

UNCLASSIFIED REPORT

DESCRIPTORS: *HANDBOOKS, *POWER SUPPLIES, *SOLAR
RADIATION, ABSORPTION, COATINGS, COLLECTING METHODS,
CONFIGURATION, DESIGN, ENERGY CONVERSION, HEAT, LENSES,
MATERIALS, MIRRORS, OPTICAL EQUIPMENT, OPTICAL
MATERIALS, PROCESSING, REFLECTORS, SATELLITES
(ARTIFICIAL), SPACE ENVIRONMENTS, SPACE FLIGHT,
SPACECRAFT, STORAGE, TESTS, THERMOCHEMISTRY (U)

Basic problems in the development of lightweight,
high efficiency, solar concentrating mirrors for
space power systems are discussed. Various
concentrator and absorber configurations are compared
both on the basis of idealized performance and in
regard to performance degradation due to geometric
errors. Concentrator structural design
classifications are presented and are related to
fabrication techniques, materials, and reflective
surfacing methods. Orientation requirements and the
effects of the space environment are considered.
Tests are presented for determining collector
performance and for evaluating mirror surface
quality. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD- 256 748
ELECTRO-OPTICAL SYSTEMS INC PASADENA CALIF

SEP 60 1V
REPT. NO. 390 F
CONTRACT: AF33 616 6791

UNCLASSIFIED REPORT

DESCRIPTORS: *HANDBOOKS, *POWER SUPPLIES, *SOLAR CELLS,
*SOLAR RADIATION, *THERMIONIC EMISSION,
*THERMOELECTRICITY, COSTS, DESIGN, ELECTROCHEMISTRY,
ENERGY CONVERSION, GENERATORS, HEAT ENGINES,
PHOTOELECTRIC CELLS (SEMICONDUCTOR), PHOTOTUBES,
RELIABILITY, SATELLITES (ARTIFICIAL), SPACE
ENVIRONMENTS, SPACE FLIGHT, SPACECRAFT, STORAGE
BATTERIES, THEORY, THERMOCOUPLES, TURBINES (U)

A summary is given of the anticipated performance of solar power systems over the next decade. This summary is based upon the analytical and empirical relationships describing component performance. Weight, cost, and reliability estimates are presented for photovoltaic power systems, and weight estimates are given for solar-thermal systems. Thermal converters include thermoelectric discs, thermionic emitters, turbo-generators, and the Stirling engine. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09
AD- 255 609
ASSISTANT CHIEF OF STAFF FOR INTELLIGENCE (ARMY)
WASHINGTON D C

OPTIC IN INSTALLATIONS FOR THE UTILIZATION OF SOLAR ENERGY (U)

DEC 59 1V
REPT. NO. H 4787
VEYNBERG,V.B.:

UNCLASSIFIED REPORT

DESCRIPTORS: *ELECTRIC POWER PRODUCTION, *OPTICAL EQUIPMENT, *SOLAR RADIATION, HEAT EXCHANGERS, LENSES, POWER, REFLECTORS, SOLAR FURNACES, THERMAL RADIATION (U)

AD- 256 748

UNCLASSIFIED

PAGE

116

AD- 255 609

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 255 389

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

A SPLINTER OF THE SUN

NOV 60 1V NABIULLIN, F.:

UNCLASSIFIED REPORT

(U)

DESCRIPTORS: *ELECTRIC POWER PRODUCTION, *SOLAR CELLS,
*SOLAR RADIATION, ENERGY, SILICON, SUN (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 101 783

MARSHAW CHEMICAL CO CLEVELAND OHIO

A CADMIUM SULFIDE SOLAR ENERGY GENERATOR

(U)

JUN 56 1V HAMMOND, DAVID A.: SHIRLAND, FRED A.:
CONTRACT: AF33 613 2E82
MONITOR: ASD TR-56-57

UNCLASSIFIED REPORT

DESCRIPTORS: *GENERATORS, *SOLAR RADIATION, CADMIUM
COMPOUNDS, CRYSTALS, GROWTH (PHYSIOLOGY), SULFIDES (M)

AD- 255 389

UNCLASSIFIED

PAGE

117

AD- 101 783

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 99 917

HARSHAW CHEMICAL CO CLEVELAND OHIO

CADMIUM SULFIDE SOLAR GENERATOR

(U)

DESCRIPTIVE NOTE: Quarterly progress report, no. 4, 1 July-1 Oct 55.

OCT 55 212 HARVARD, DAVID A.

CONTRACT: AF33 616 2682

UNCLASSIFIED REPORT

DESCRIPTORS: *CADMIUM COMPOUNDS, *POWER SUPPLIES, CRYSTALS, GROWTH (PHYSIOLOGY), SOLAR RADIATION, SULFIDES

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 69 093

HARSHAW CHEMICAL CO CLEVELAND OHIO

CADMIUM SULFIDE SOLAR GENERATOR

(U)

DESCRIPTIVE NOTE: Progress report, no. 23 July 55 '69 HARVARD, DAVID A.

CONTRACT: AF33 616 2682

PROD: TAT-1401

UNCLASSIFIED REPORT

DESCRIPTORS: *GENERATORS, *SOLAR RADIATION, CADMIUM COMPOUNDS, CRYSTALS, SULFIDES

(U)

AD- 99 917

UNCLASSIFIED

PAGE

118

AD- 69 093

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 66 783
HARSHAW CHEMICAL CO CLEVELAND OHIO

CADMIUM SULFIDE SOLAR GENERATOR (U)

DESCRIPTIVE NOTE: Quarterly progress rept. no. 2, 1 Jan-
1 Apr 55.
APR 55 9P HAMMOND, DAVID A.;
CONTRACT: AF33 616 2682

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOLAR CELLS), (*CADMIUM SULFIDES),
(*GENERATOR), ELECTRIC POWER PRODUCTION, SOLAR
RADIATION, MANUFACTURING (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 53 603
HARSHAW CHEMICAL CO CLEVELAND OHIO

CADMIUM SULFIDE SOLAR GENERATOR (U)

JAN 55 1V HAMMOND, DAVID A.;
CONTRACT: AF33 616 2682

UNCLASSIFIED REPORT

DESCRIPTORS: *GENERATORS, *PHOTOELECTRIC CELLS
(SEMICONDUCTOR), *THERMOELECTRICITY, CADMIUM COMPOUNDS,
CRYSTALS, GROWTH(PHYSIOLOGY), NUCLEATION, SOLAR CELLS,
SOLAR RADIATION, SULFIDES (U)

AD- 66 783

UNCLASSIFIED

PAGE 119

AD- 53 603

UNCLASSIFIED

ZOM09

CORPORATE AUTHOR - MONITORING AGENCY

•ADVANCED RESEARCH PROJECTS AGENCY
ARLINGTON VA

ARPA-80 59
PHOTOEMISSION SOLAR ENERGY
CONVERTER
AD- 264 828

♦ADVISORY GROUP FOR AEROSPACE RESEARCH
AND DEVELOPMENT PARIS (FRANCE)

AGARD-OGRAPH-123-PT-1
SPACE POWER SYSTEMS. PART I.
AD- 698 652

AGARD-OGRAPH-123-PT-2
SPACE POWER SYSTEMS. PART II.
AD- 698 653

★AERONAUTICAL SYSTEMS DIV WRIGHT-
PATTERSON AFB OH

ASD-TDR62 214
FLAT-PLATE SOLAR THERMOELECTRIC
CONVERSION PANELS.
AC- 282 213

ASD-TDR62 600
DEVELOPMENT OF A PHOTOEMISSIVE
SOLAR ENERGY CONVERTER
AD- 288 650

ASD-TDR62 1021
PHOTODEMISSIVE ENERGY CONVERSION
APPLIED RESEARCH PROGRAM
AD- 294 000

ASD-TDR62 1069
LONG-LIFE THERMIONIC CONVERTERS
FOR SOLAR POWER SYSTEMS
AD-299 004

ASD-TR-55-57
A CADMIUM SULFIDE SOLAR ENERGY
GENERATOR
AD-101 783

ASD-TR60 849
INVESTIGATION OF SOLAR
CONCENTRATING PHOTOVOLTAIC POWER
GENERATORS

AD- 264 989

ASD-TR61 439
TEMPERATURE CONTROL TECHNIQUE
FOR SOLAR ENERGY CONVERTERS
AD- 274 922

*AEROSPACE CORP EL SEGUNDO CA SPACE SCIENCES LAB

TR-C079(4960-04)-5
Environmental Factors of Power
Satellites.
(SAMSO-TR-79-66)
AD-A072 308

**AEROSPACE CORP EL SEGUNDO CALIF
 LABS DIV

TR-1001 (2250-20)-7
SOLAR CELL POWER SYSTEMS FOR
AIR FORCE SATELLITES,
(SSD-TR-67-89)
AD- 654 285

TR-1001 (2730-01)-2
AN EVALUATION AND COMPARISON OF
POWER SYSTEMS FOR LONG-DURATION,
MANNED SPACE VEHICLES.
(SSD-TR-67-132)
AD- 820 856

*AEROSPACE CORP EL SEGUNDO CALIF IVAN
A GETTING LADS

TR-C078(3590-05)-4
Satellite Observations of
Polar, Magnetotail Lobe, and
Interplanetary Electrons at Low
Energies.
(SAMSO-TP-78-3)
AD-A050 540

*AEROSPACE CORP EL SEGUNDO CALIF LAB
OPERATIONS

TR-C066(5230-20)-11
PROPAGATION OF SOLAR PARTICLES
TO THE POLAR CAPS.
(SAMSO-TR-70-30)
AD-701 739

CORP AUTHCR-MONITOR AGENCY-1
UNCLASSIFIED Z0403

• • •
TR-00/414200-01

Experimental Evidence for the
Connection between the Geomagnetic
and the Interplanetary Fields as
Determined from Observations of
Energetic Solar Particles,
(SAISO-TR-73-257)
AD-766 715

TR-0074(4200-20)-5
Solar Electron Access to the
Magnetosphere,
(SA750-TR-73-347)
AD- 770 319

TR-0172(2260-31)-2
The Aerospace Corporation Space
Science Program Report to COSPAR CY
1971.

AD- 746 326

TR-0172(260-10)-5
Solar Photosorption and
Thermal Processes in the Polar
Thermosphere.
(SAMSO-TR-71-320)
AD- 735 305

TR-0172(2260-10)-9-VOL-1
Annual and Sub-Annual Effects
of EUV (Extreme Ultraviolet)
Heating, Volume I. Harmonic
Analysis.
(SAVSO-TR-72-115-VOL-1)
AD- 745 305

TR-0172(2260-10)-9-VOL-2
Annual and Sub-Annual Effects
of EUV (Extreme Ultraviolet)
Heating, Volume II. Comparison
with Densit, Observations.
(SAVSO-TR-72-113-VOL-2)
AD- 745 309

TR-0172(260-20)-11
 Rapid Access of Solar Electrons
 to the Polar Caps.
 (SAMSO-TR-71-313)
 AD-736 430

UNCLASSIFIED

*AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB OH	AFAPL-TR-74-89-1 Solar Collector Thermal Power System. Volume I. Preliminary Technology Systems Study. AD-A000 940	Nonreflecting Vertical Junction Silicon Solar Cell Optimization. AD-A064 431
AFAPL-TR-64-132-PT-5 PROGRAM ROE (REFLECTOR ORBITAL EXPERIMENT). PART V. INVESTIGATION OF TEST PROGRAMS FOR SOLAR COLLECTOR MATERIALS. AD- 813 123	AFAPL-TR-74-89-2 Solar Collector Thermal Power System. Volume II. Development, Fabrication, and Testing of Fifteen Foot Heat Pipes. AD-A000 941	AFAPL-TR-78-96 High Efficiency GaAs Solar Cell Development. AD-A066 616
AFAPL-TR-66-109-VOL-1 FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME I. SUMMARY. AD- 804 109	AFAPL-TR-75-98 Low Reflectivity Solar Cells. AD-A025 922	AFAPL-TR-79-2031 Low Resistivity-High Minority Carrier Lifetime Single Crystal Silicon Investigation. AD-A077 684
AFAPL-TR-66-109-VOL-2 FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME II. MISSION ANALYSIS. AD- 804 110	AFAPL-TR-77-36 High Efficiency Solar Panel (HESP). AD-A043 382	AFAPL-TR-68-36 DETERMINATION OF CAUSE OF PRESSURE SURGE ASSOCIATED WITH LITHIUM-FLUORIDE STEAM HEAT RECEIVER. AD- 839 951
AFAPL-TR-66-109-VOL-3 FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME III. SPACECRAFT DESIGN. AD- 804 111	AFAPL-TR-77-38 Nonreflecting Vertical Junction Silicon Solar Cell Optimization. AD-A046 150	*AIR FORCE AVIONICS LAB WRIGHT-PATTERSON AFB OH
AFAPL-TR-67-53-VOL-1 SPACE LINKAGE SYSTEM. ANALYTICAL STUDY AND PRELIMINARY DESIGN. VOLUME I. AD- 816 039	AFAPL-TR-77-80 GaAs Concentrator Photovoltaic Power System Feasibility Investigation. AD-A051 851	AFAL-TR-74-97 Satellite Mounted Tracking Optics to Continuously Pump Sun-Pumped Laser. AD-A000 040
AFAPL-TR-67-53-VOL-2 SPACE LINKAGE SYSTEM. ANALYTICAL STUDY AND PRELIMINARY DESIGN. VOLUME II. APPENDICES. AD- 816 040	AFAPL-TR-77-86 Low Temperature Fabrication of High Efficiency Silicon Solar Cells. AD-A061 956	*AIR FORCE CAMBRIDGE RESEARCH LABS HANSCOM AFB MA
AFAPL-TR-74-45-VOL-2 Development of Vertical Multijunction Solar Cells for Spacecraft Primary Power. Volume II. AD-A025 719	AFAPL-TR-78-19-VOL-3-PT-2 USAF Terrestrial Energy Study. Volume III. Part 2. Energy Conversion Systems Handbook. AD-A057 252	AFCRL-63-940 RESEARCH IN ENERGY CONVERSION. AD- 429 505
	AFAPL-TR-78-60 High Efficiency Solar Panel (HESP-II). AD-A065 009	AFCRL-71-0163 Research in Solar Energy Conversion. AD- 726 114
	AFAPL-TR-78-91	AFCRL-72-0324 A Model for U-Shaped Solar Burst Spectra. AD- 747 033

CORP AUTHOR-MONITOR AGENCY-2
UNCLASSIFIED
ZOM03

AIR-AIR

UNCLASSIFIED

AFCL-475
RESEARCH DETECTED TOWARD THE
IMPROVEMENT OF THE EFFICIENCY OF
SILICON BATTERIES BY UTILIZATION OF
UNABSORBED PHOTONS
AD- 257 495

*AIR FORCE CAMBRIDGE RESEARCH LABS
HANSCOM AFB MASS

AFCL-TR-76-0042
Interpretation of Flare-
Produced Proton Spectra,
AD-A020 776

*AIR FORCE CAMBRIDGE RESEARCH LABS L G
HANSCOM FIELD MASS

AFCL-72-0301
Rapid Access of Solar Electrons
to the Polar Caps,
AD- 744 404

AFCL-TR-74-0362
Interplanetary Particle Fluxes
Observed by CV5-6 Satellite.
AD- 784 520

*AIR FORCE CIVIL ENGINEERING CENTER
TYNDALL AFB FL

AFCEC-TR-77-12
Technical Guidelines for Energy
Conservation.
AD-A041 668

AFCEC-TR-78-6
Solar Assisted Heat Pump Study
for Heating of Military Facilities.
AD-A058 626

*AIR FORCE ENGINEERING AND SERVICES
CENTER TYNDALL AFB FL ENGINEERING
AND SERVICES LAB

AFESC/ESL-TR-79-20
Analysis of Remote Site Energy
Storage and Generation Systems.
AD-A074 869

AFESC/ESL-TR-79-21-VOL-1

Survivability of Remote Site
Alternate Energy Systems. Volume I.
Survivability Analysis.
AD-A078 118

*AIR FORCE GEOPHYSICS LAB HANSCOM AFB
MA

AFGL-TR-76-0030
Influence of the Solar Electron
Energy Distribution on the
Microwave Spectrum of Gyro-
Synchrotron Radiation.
AD-A022 977

AFGL-TR-76-0136
Prediction of Solar Energetic
Particle Event Histories Using Real-
Time Particle and Solar Wind
Measurements,
AD-A028 057

AFGL-TR-79-0037
Very Large Array (V.L.A.)
Observations of Solar Active
Regions.
AD-A066 780

AFGL-TR-79-0141
Interplanetary Energy Flux
Associated with Magnetospheric
Substorms,
AD-A071 388

AFGL-TR-79-0161
High Resolution Observations of
Fibril Changes in a Small Flare,
AD-A072 212

*AIR FORCE GEOPHYSICS LAB HANSCOM AFB
MASS

AFGL-TR-76-0107
Production of Flare-Produced H2
and He3,
AD-A025 033

*AIR FORCE INST OF TECH WRIGHT-
PATTERSON AFB OHIO

Satellite Mounted Tracking

CORP AUTHOR-MONITOR AGENCY-3
UNCLASSIFIED

Optics to Continuously Pump Sun-
Pumped Laser.
(AFAL-TR-74-97)
AD-A000 040

*AIR FORCE INST OF TECH WRIGHT-
PATTERSON AFB OHIO SCHOOL OF
ENGINEERING

AFIT/CEP/PH/77D-3
Solar Electric Generating
System Resource Requirements and
the Feasibility of Orbiting Solar
Reflectors.
AD-A048 908

*AIR FORCE INST OF TECH WRIGHT-
PATTERSON AFB OHIO SCHOOL OF
SYSTEMS AND LOGISTICS

AFIT-LSSR-32-778
Net Energy Analysis Model for
the Evaluation of a Solar Heating,
Ventilation and Air Conditioning
System.
AD-A047 433

*AIR FORCE MATERIALS LAB WRIGHT-
PATTERSON AFB OH

AFML-TR-70-294
Solar Heat Source Feasibility
Study.
AD- 879 939

*AIR FORCE MISSILE DEVELOPMENT CENTER
HOLLOMAN AFB NMEX

MDC-HDW-TM-55-1
Notes on Optical Design
Principles, Concentration Ratios,
and Maximum Temperatures of
Parabolic Solar Furnaces.
AD-A001 066

MDC-HDW-TM-55-2
Summary of Parabolic Solar
Furnace Performance Design.
AD-A001 063

*AIR FORCE OFFICE OF SCIENTIFIC

AIR-AIR

UNCLASSIFIED

RESEARCH BOLLING AFB DC
 * * *
 AFOSR-67-1139
 THORIA SINGLE CRYSTALS GROWN BY
 VAPOR DEPOSITION IN A SOLAR
 FURNACE.
 AD- 652 752 * * *
 AFOSR-TR-71-0595
 Industrial Chemistry in Space,
 AD- 720 136 * * *
 AFOSR-TR-74-0600
 Solar Energy.
 AD- 778 946 * * *
 AFOSR-TR-76-0672
 Application of Granular
 Semiconductors to Photothermal
 Conversion of Solar Energy.
 AD-A027 547 * * *
 AFOSR-TR-76-0784
 A Two-Dimensional Global
 Climatic Model.
 AD-A028 548 * * *
 AFOSR-TR-79-1077
 The Step Excitation Method for
 Studying Reversible Excited-State
 Electron-Transfer Reactions:
 Experimental Realization.
 AD-A078 144 * * *
 *AIR FORCE WEAPONS LAB KIRTLAND AFB N
 MEX * * *
 AFWL-TR-75-193
 Alternative Energy Sources for
 United States Air Force
 Installations.
 AD-A014 858 * * *
 *ALASKA UNIV FAIRBANKS GEOPHYSICAL
 INST * * *
 UAG-CONTRIB-A530
 Interplanetary Energy Flux
 Associated with Magnetospheric
 Substorms.
 (AFGL-TR-79-0141)

AD-A071 308
 *ARIZONA UNIV TUCSON INST OF
 ATMOSPHERIC PHYSICS * * *
 A Two-Dimensional Global
 Climatic Model.
 (AFOSR-TR-76-0784)
 AD-A028 548 * * *
 *ARMY ARMAMENT RESEARCH AND
 DEVELOPMENT COMMAND DOVER NJ
 MANAGEMENT INFORMATION SYSTEMS
 DIRECTORATE * * *
 ARMID-TR-78002
 The Application of DC-DC Energy
 Conversion in a Solar Energy
 System.
 (SBIE-AD-E400 363)
 AD-A077 112 * * *
 *ARMY ELECTRONICS COMMAND FORT
 MONMOUTH N J * * *
 POWER SOURCES CONFERENCE (16th
 ANNUAL), HELD 22-24 MAY 1962.
 PROCEEDINGS.
 AD- 696 421 * * *
 POWER SOURCES CONFERENCE (17th
 ANNUAL), HELD 21-23 MAY 1963.
 PROCEEDINGS.
 AD- 696 422 * * *
 POWER SOURCES CONFERENCE (18th
 ANNUAL), HELD 19-21 MAY 1964.
 PROCEEDINGS.
 AD- 696 423 * * *
 POWER SOURCES CONFERENCE (19th
 ANNUAL), HELD 18-20 MAY 1965.
 PROCEEDINGS.
 AD- 696 424 * * *
 POWER SOURCES CONFERENCE (20th
 ANNUAL), HELD 24-25-26 MAY 1966.
 PROCEEDINGS.
 AD- 696 425 * * *
 ECOM-4495

AD-A039 995
 A Solar Power Radiometer.
 *ARMY ELECTRONICS LABS FORT MONMOUTH N
 J * * *
 PROCEEDINGS, ANNUAL POWER
 SOURCES CONFERENCE (14TH), 17-19
 MAY 1960.
 AD- 607 425 * * *
 *ARMY ENGINEER WATERWAYS EXPERIMENT
 STATION VICKSBURG MISS * * *
 WES-TR-D-77-32
 Identification of Alternative
 Power Sources for Dredged Material
 Processing Operations.
 AD-A048 312 * * *
 *ARMY FACILITIES ENGINEERING SUPPORT
 AGENCY FORT BELVOIR VA RESEARCH
 AND TECHNOLOGY DIV * * *
 USAFESA-RT-2006
 Review and Analysis of National
 Energy Research and Development
 Programs and Proposals.
 AD-A020 794 * * *
 *ARMY FOREIGN SCIENCE AND TECHNOLOGY
 CENTER CHARLOTTEVILLE VA * * *
 FSTC-HT-23-0219-75
 Research and Development
 Project for New Energy Technology
 (Sunshine Plan).
 AD-A014 534 * * *
 FSTC-HT-23-0432-74
 Wind and Solar Power
 Engineering.
 AD- 786 844 * * *
 FSTC-HT-23-750-72
 Solar Battery-Photovoltaic Cell
 Power Supply for Equipment
 (Ustroistvo Dlya Pitaniya
 Potrebitelei Ot Solnechnoi Batarei
 S Fotoprebrazo Vatelyami).
 AD- 748 694

CORP AUTHOR-MONITOR AGENCY-4
 UNCLASSIFIED
 Z0Y09

AIR-ARM

UNCLASSIFIED

- ***
 FSTC-HT-23-921-72
 Space Electric Power Plants.
 Part 2.
 AD- 756 039
- ***
 FSTC-HT-23-922-72
 Solar and Wind Power to Be
 Harnessed (Energiyu Solntsa i Vetra
 - v Upryazhu).
 AD- 765 783
- ***
 FSTC-HT-23-923-72
 Space Electric Power Plants.
 Part 1 (Litso k Solntsu).
 AD- 741 524
- ***
 FSTC-HT-23-1014-72
 A Study of 'Photovolt'
 Generator at High Radiation
 Intensity (Issledovanie
 Elektricheskikh Kharakteristik
 Generatorov 'Fotovolt' pri
 Povyshennoi Moshchnosti
 Izlucheniya).
 AD- 745 364
- ***
 FSTC-HT-23-1208-72
 Film Solar Energy Collector
 with Concentric Circular Seams
 (Plenuchnyi Konsentrator Solnechnoi
 Energii s Krugovymi
 Konsentricheskimi Shvami).
 AD- 755 829
- ***
 FSTC-HT-23-1209-72
 The Heliodevice
 (Gelioustanovka).
 AD- 772 451
- ***
 FSTC-HT-23-1429-71
 Contemporary Status of Studies
 on Direct Conversion of Solar
 Energy to Electrical Energy
 (Sovremennoe Sostoyanie
 Issledovaniy po Pryamomu
 Preobrazovaniyu Solnechnoi Energii
 v Elektricheskuyu).
 AD- 747 293
- ***
 FSTC-HT-23-1433-72
- Calculation and Cost
 Optimization of Certain Solar
 Generator Thermobattery Parameters
 (K Raschetu i Optimizatsii po
 Stoiimosti Nekotorykh Parametrov
 Termobatarei Solnechnykh
 Generatorov).
 AD- 759 812
- ***
 FSTC-HT-23-1434-72
 Performance Reliability
 Calculation for a Modular Solar
 Thermoelectric Generator.
 AD- 757 087
- ***
 FSTC-HT-23-1577-71
 Semiconductor Solar Energy
 Converters and the Phenomenon of
 Photo Conductivity Quenching
 (Poluprovodnikovye Preobrazovately
 Solnechnoi Energii i Yavlenie
 Gasheniya Fotoprovodimosti).
 AD- 743 031
- ***
 FSTC-HT-23-1578-71
 The Application of Phenol-
 Formaldehyde Plastic Foam as
 Thermal Insulation for Solar Water
 Heaters (Primenenie Fenolo-
 Formaldegidnogo Penoplasta u
 Kachestve Teploizolyatsii dlya
 Geliiodonagrevatelyei).
 AD- 756 591
- ***
 FSTC-HT-23-1580-71
 Study of Phototechnical
 Characteristics of Polymer Films
 Used as Transparent Coatings in
 Solar Water Heaters (Issledovanie
 Svetotekhnicheskikh Kharakteristik
 Polimernykh Plenok. Primeneniye
 dlya Prozhnogo Pokrytiya v
 Geliiodonagrevatelyakh).
 AD- 742 111
- ***
 FSTC-HT-23-1591-73
 Electric Circuit Calculations
 for Multistage Solar Thermoelectric
 Generators.
 AD- 782 041
- ***
 FSTC-HT-23-1433-72
- FSTC-HT-23-1592-73
 Thermodynamic Analysis and
 Parameter Optimization of a Solar
 Thermoelectric Power Unit with
 Radiation Heat Dissipation.
 AD-A000 211
- *ARMY MOBILITY EQUIPMENT RESEARCH AND
 DEVELOPMENT COMMAND FORT BELVOIR
 VA

 MERADCOM-2229
 Solar Cell Power for Field
 Instrumentation at White Sands
 Missile Range.
 AD-A053 960
- *ASSISTANT CHIEF OF STAFF FOR
 INTELLIGENCE (ARMY) WASHINGTON D C

 H 4787
 OPTIC IN INSTALLATIONS FOR THE
 UTILIZATION OF SOLAR ENERGY
 AD- 255 609
- *AVCO CORP WILMINGTON MASS AVCO
 SPACE SYSTEMS DIV

 THORIA SINGLE CRYSTALS GROWN BY
 VAPOR DEPOSITION IN A SOLAR
 FURNACE.
 (AFDSR-67-1139)
 AD- 652 752
- *BALLISTIC RESEARCH LABS ABERDEEN
 PROVING GROUND MD

 BRL-1895
 Solar Energy Storage.
 AD-A028 083
- *BOUL-ALLEN AND HAMILTON INC BETHESDA
 MD

 Alternative Strategies for
 Optimizing Energy Supply,
 Distribution, and Consumption
 Systems on Naval Bases. Volume II.
 Advanced Energy Conservation
 Strategies.
 (CEL-CR-74.007)

CORP AUTHOR-MONITOR AGENCY-5
 UNCLASSIFIED
 ZOM09

ARM-800

UNCLASSIFIED

AD- 786 757

*BOSTON COLL CHESTNUT HILL MASS DEPT OF PHYSICS * * *

SCIENTIFIC-1

A Model for U-Shaped Solar Burst Spectra, (AFCLR-72-0324)

AD- 747 033

*BOSTON UNIV MASS DEPT OF CHEMISTRY * * *

Photon Energy Storage in Organic Materials: The Case of Linked Anthracenes.

AD-A039 702

Photoisomerization of Bis(9-Anthryl)methane and other Linked Anthracenes. The Role of Excimers and Biradicals in Photodimerization.

AD-A051 336

Energy Storing Organic Photoreactions.

AD-A074 915

Photosensitization Mechanisms for Energy Storing Isomerizations.

AD-A074 968

*BURNS AND ROE INC WOODBURY NY * * *

USAF Terrestrial Energy Study. Volume III, Part 2. Energy Conversion Systems Handbook. (AFAPL-TR-78-19-VOL-3-PT-2)

AD-A057 252

*CALIFORNIA UNIV LOS ANGELES DEPT OF CHEMISTRY * * *

Industrial Chemistry in Space. (AFOSR-TR-71-0595)

AD- 720 136

*CALIFORNIA UNIV RIVERSIDE INST OF GEOPHYSICS AND PLANETARY PHYSICS * * *

IGPP-UCR-73-12

Relativistic Electron Events in Interplanetary Space.

AD- 763 756

IGPP-UCR-75-15

Upper Limits to the Quiet-Time Solar Neutron Flux from 10 to 100 MeV.

AD-A015 672

TR-7

Relativistic Electron Events in Interplanetary Space.

AD- 76 756

*CIVIL AND ENVIRONMENTAL ENGINEERING DEVELOPMENT OFFICE TYNDALL AFB FL DETACHMENT 1 (ADTC) * * *

CEEDO-TR-77-34

Second Interim Technical Report on USAFA Solar Test House.

AD-A045 042

CEEDO-TR-77-38

Field Test of Building Energy Analysis Tools and Procedures.

AD-A055 095

CEEDO-TR-77-39

A Survey of Considerations for Solar Energy Facility Applications.

AD-A049 490

CEEDO-TR-78-32

Third Interim Technical Report on USAFA Solar Test House Design Parameters.

AD-A060 458

*CIVIL ENGINEERING LAB (NAVY) PORT HUENEME CA * * *

CEL-CR-74.007

Alternative Strategies for Optimizing Energy Supply, Distribution, and Consumption Systems on Naval Bases. Volume II. Advanced Energy Conservation Strategies.

AD- 786 757

CEL-CR-77.018

Solar Air - Conditioning Study.

AD-A043 951

CEL-CR-78.003

Preliminary Design of a 10 kWe Solar Heated Open Brayton-Cycle Engine. Phase I.

AD-A051 101

CEL-CR-78.009

A Preliminary Design, Economic and Energy Analysis, and Environmental Impact Assessment for a Seawater Cooling Project Naval Security Group Facilities at Winter Harbor, Maine.

AD-A056 603

CEL-TN-1534

Digest of Equipment for Converting Solar, Wind, and Geothermal Energy into Electric Power for USN Application Ashore.

AD-A066 221

CEL-TR-835

Solar Heating of Buildings and Domestic Hot Water.

AD-A054 601

*CIVIL ENGINEERING LAB (NAVY) PORT HUENEME CALIF * * *

CEL-TN-1534

Digest of Equipment for Converting Solar, Wind, and Geothermal Energy into Electric Power for USN Application Ashore.

AD-A066 221

CEL-TR-835

Solar Heating of Buildings and Domestic Hot Water.

AD-A054 601

*COAST GUARD CALIFOREND FIELD TESTING AND DEVELOPMENT CENTER * * *

Hoffman MSPP-1 Solar Converter.

AD- 786 384

*COAST GUARD WASHINGTON DC * * *

USCG-D-11-77-VOL-1

Computer Program for Design and

BOS-COA

CORP AUTHORMONITOR AGENCY-6
UNCLASSIFIED
Z0X09

UNCLASSIFIED

Performance Analysis of Navigation-Aid Power Systems. Program Documentation. Volume I. Software Requirements Document.
AD-A047 925

USCG-D-11-77-VOL-2
Computer Program for Design and Performance Analysis of Navigation-Aid Power Systems Program Documentation. Volume II - User's Manual.
AD-A047 356

USCG-D-11-77-VOL-3
Computer Program for Design and Performance Analysis of Navigation-Aid Power Systems Program Documentation. Volume III - Programmer's Manual.
AD-A047 542

USCG-D-18-79
Coast Guard Marine Exposure Facilities for Naturally Aging Solar Photovoltaic Modules.
AD-A067 891

USCG-D-23-79
Economic Analysis of Solar Photovoltaics for Low-Power Lighted Aids to Navigation.
AD-A068 365

USCG-D-43-79
Evaluation of Solar Photovoltaic Arrays for Use on Marine Aids to Navigation.
AD-A074 893

USCG-D-80-76
Analysis of the Technical and Cost Feasibility of Solar and/or Wind Energy Systems for Coast Guard Public Quarters.
AD-A028 332

*COAST GUARD RESEARCH AND DEVELOPMENT
CENTER GROTON CONN
CGR/DC-20/78

Coast Guard Marine Exposure Facilities for Naturally Aging Solar Photovoltaic Modules.
(USCG-D-18-79)
AD-A067 891

*COAST GUARD RESEARCH AND DEVELOPMENT
CENTER GROTON CT
CGR/DC-7/79
Evaluation of Solar Photovoltaic Arrays for Use on Marine Aids to Navigation.
(USCG-D-43-79)
AD-A074 893

CGR/DC-11/78
Economic Analysis of Solar Photovoltaics for Low-Power Lighted Aids to Navigation.
(USCG-D-23-79)
AD-A068 365

CGR/DC-18/76-VOL-1
Computer Program for Design and Performance Analysis of Navigation-Aid Power Systems. Program Documentation. Volume I. Software Requirements Document.
AD-A047 925

CGR/DC-18/76-VOL-2
Computer Program for Design and Performance Analysis of Navigation-Aid Power Systems Program Documentation. Volume II - User's Manual.
AD-A047 356

CGR/DC-18/76-VOL-3
Computer Program for Design and Performance Analysis of Navigation-Aid Power Systems Program Documentation. Volume III - Programmer's Manual.
AD-A047 542

*COLD REGIONS RESEARCH AND ENGINEERING
LAB HANOVER NH
CRREL-SR-76-17

CORP AUTHOR-MONITOR AGENCY-7
UNCLASSIFIED
ZOMQ9

Energy Conservation in Buildings.
AD-A034 141
*CONSTRUCTION ENGINEERING RESEARCH LAB
(ARMY) CHAMPAIGN IL

CERL-SR-E-155
Investigation of the Interrelationship between Direct, Diffuse, and Total Solar Radiation.
AD-A072 986

CERL-TR-E-58
Projections of Energy Availability, Cost, and Aggregate Demand for 1975, 1980, 1985 and 1990.
AD-A010 712

CERL-TR-E-65-VOL-1
Solar Heating and Cooling of Buildings Study Conducted for Department of the Army. Volume I: Executive Summary and Implementation Plans.
AD-A002 576

CERL-TR-E-65-VOL-2
Solar Heating and Cooling of Buildings Study Conducted for Department of the Army. Volume II: Technical Report.
AD-A002 563

*CONSTRUCTION ENGINEERING RESEARCH LAB
(ARMY) CHAMPAIGN ILL
Method for Estimating Solar Heating and Cooling System Performance.
AD-A026 041

A Comparison of the Actual and Predicted Performance of a Solar Assisted Space Heating System.
AD-A056 452

CERL-IR-E-98
Predicting the Performance of Solar Energy Systems.

COA-CON

UNCLASSIFIED

AD-A035 608 * * *
CERL-IR-E-129
Field Test of Building Energy
Analysis Tools and Procedures.
AD-A055 095 * * *
CERL-IR-E-144
The Performance of an
Experimental Solar Heating System.
AD-A066 699 * * *
CERL-TR-E-91
Interim Feasibility Assessment
Method for Solar Heating and
Cooling of Army Buildings.
AD-A026 588 * * *
CERL-TR-E-102
Market Evaluation Study: Solar
Domestic Water Heaters for DOD
barracks.
AD-A036 479 * * *
CERL-TR-E-114
Market Evaluation Study: Solar
Heating and Domestic Hot Water
Heating in DOD Buildings.
AD-A042 178 * * *
CERL-TR-E-139
Design of Solar Heating and
Cooling Systems.
AD-A062 719 * * *
*DARCOM INTERN TRAINING CENTER
TEXARKANA TEX * * *
DARCOM-ITC-02-08-76-203
The Feasibility of Solar Energy
Usage on Red River Army Depot.
AD-A025 119 * * *
*DAVID SARNOFF RESEARCH CENTER
PRINCETON NJ * * *
Application of Granular
Semiconductors to Photothermal
Conversion of Solar Energy.
(AFOSR-TR-76-0672)

AD-A027 547 * * *
*DAYTON UNIV OHIO SCHOOL OF
ENGINEERING * * *
UDR-TR-79-35
Analysis of Remote Site Energy
Storage and Generation Systems.
(AFESC/ESL-TR-79-20)
AD-A074 869 * * *
UDSE-TR-79-02
Analysis of Remote Site Energy
Storage and Generation Systems.
(AFESC/ESL-TR-79-20)
AD-A074 869 * * *
*DECISIONS AND DESIGNS INC MCLEAN VA
* * *
TR-77-5-25
An Attitudinal Study of the
Home Market for Solar Devices.
AD-A045 082 * * *
*DEFENSE RESEARCH INFORMATION CENTRE
ORPINGTON (ENGLAND) * * *
DRIC-BR-44998
Work in UK on the Applications
of Solar Cells in Space.
AD-A011 084 * * *
*DEFENSE DOCUMENTATION CENTER
ALEXANDRIA VA * * *
DDC/BIB-77/03
Solar Energy.
AD-A038 600 * * *
*DEFENSE NUCLEAR AGENCY WASHINGTON DC
* * *
DNA-4484F-3
Experimental Studies of Soil
Thermal Irradiation. Volume III.
Design of Flux Diversion Equipment
for Soil Irradiation Testing.
AD-A058 304 * * *
*DEPUTY COMMANDER AEROSPACE SYSTEMS
INGLEWOOD CA * * *

DCAS-TDR62 164
ENERGY CONVERSION RESEARCH
PROGRAM. DIRECT CONVERSION OF
CHEMICAL ENERGY TO ELECTRICAL
ENERGY
AD- 285 084 * * *
*DEPUTY COMMANDER AEROSPACE SYSTEMS
INGLEWOOD CALIF * * *
TDR62 164
ENERGY CONVERSION RESEARCH
PROGRAM. DIRECT CONVERSION OF
CHEMICAL ENERGY TO ELECTRICAL
ENERGY
(DCAS-TDR62 164)
AD- 285 084 * * *
*DUBIN-BLOOME ASSOCIATES NEW YORK
* * *
Solar Assisted Heat Pump Study
for Heating of Military Facilities.
(AFCEC-TR-78-6)
AD-A058 626 * * *
*EDGEWOOD ARSENAL ABERDEEN PROVING
GROUND MD * * *
EQ-SP-74326
Proceedings of Annual Symposium
'Energy Research and Development'
(5th) on 13-14 March 1974.
Sponsored by the American Defense
Preparedness Association.
AD-A007 799 * * *
*ELECTRONIC SYSTEMS DIV HANSCOM AFB
MA * * *
ESD-TR-74-363
Transparent Heat-Mirror Films
of TiO2/Ag/TiO2 for Solar Energy
Collection and Radiation
Insulation.
AD-A007 892 * * *
ESD-TR-75-345
Properties of Sn-Doped In2O3
Films Prepared by RF Sputtering.
AD-A024 234 * * *

CORP AUTHOR-MONITOR AGENCY-8
UNCLASSIFIED ZOM09

DAR-ELE

UNCLASSIFIED

ESD-TR-76-173
Transparent Heat Mirrors for
Solar-Energy Applications.
AD-A027 105 * * *

ESD-TR-76-174
Thin-Film Conducting Microgrids
as Transparent Heat Mirrors.
AD-A027 110 * * *

ESD-TR-78-94
Simplified Fabrication of GaAs
Homojunction Solar Cells with
Increased Conversion Efficiencies.
AD-A058 281 * * *

ESD-TR-78-379
Selective-Black Absorbers using
Sputtered Cermet Films.
AD-A069 423 * * *

ESD-TR-78-385
Solar Cells: Plugging into the
Sun.
AD-A069 319 * * *

ESD-TR-78-388
Electrode Materials for the
Photoelectrolysis of Water.
AD-A069 424 * * *

*ELECTRO-OPTICAL SYSTEMS INC PASADENA
CALIF
390 F * * *

AD- 256 748 * * *

390 F V2
ENERGY CONVERSION SYSTEMS
REFERENCE HANDBOOK. VOLUME II.
SOLAR-THERMAL ENERGY SOURCES
AD- 256 973 * * *

390 F V5
ENERGY CONVERSION SYSTEMS
REFERENCE HANDBOOK. VOLUME V.
DIRECT SOLAR CONVERSION
AD- 257 788 * * *

530 IR 1
INVESTIGATION OF SOLAR
CONCENTRATING PHOTOVOLTAIC POWER
GENERATORS
(ASD-TR60 849)
AD- 264 989 * * *

EOS-4816-F-VOL-1
FEASIBILITY STUDY OF AN ION-
PROPELLED MARS ORBITER/LANDER
SPACECRAFT WITH SOLAR PHOTOVOLTAIC
POWER. VOLUME I. SUMMARY.
(AFAPL-TR-66-109-VOL-1)
AD- 804 109 * * *

EOS-4816-F-VOL-2
FEASIBILITY STUDY OF AN ION-
PROPELLED MARS ORBITER/LANDER
SPACECRAFT WITH SOLAR PHOTOVOLTAIC
POWER. VOLUME III. SPACECRAFT
DESIGN.
(AFAPL-TR-66-109-VOL-3)
AD- 804 111 * * *

EOS-4816-VOL-2
FEASIBILITY STUDY OF AN ION-
PROPELLED MARS ORBITER/LANDER
SPACECRAFT WITH SOLAR PHOTOVOLTAIC
POWER. VOLUME II. MISSION ANALYSIS.
(AFAPL-TR-66-109-VOL-2)
AD- 804 110 * * *

FOREIGN TECHNOLOGY DIV WRIGHT-
PATTERSON AFB OHIO
A SPLINTER OF THE SUN
AD- 255 389 * * *

FTD-HT-23-42-70
MATCHING A THERMIONIC CONVERTER
WITH A SOLAR CELL IN A SOLAR POWER
ARRAY.
AD- 704 002 * * *

FTD-HT-23-62-70
HIGH-TEMPERATURE SOLAR FURNACE,
AD- 704 754 * * *

FTD-HT-23-317-72
Semiconductor Photoconvertors.
AD- 753 063 * * *

FTD-HT-23-792-74
Development of Solar
Engineering in the USSR.
AD- 784 708 * * *

F D-ID(RS)T-0327-78
The Possibilities of Selective
Glass.
AD-A065 845 * * *

FTD-ID(RS)T-1452-77
Satellite Solar Station.
AD-A061 961 * * *

FTD-MT-24-501-68
INSTALLATION FOR HIGH-
TEMPERATURE INVESTIGATIONS OF HEAT-
RESISTANT AVIATION MATERIALS AND
COATINGS.
AD- 692 635 * * *

FTD-MT-64-355
DIRECT CONVERSION OF VARIOUS
FORMS OF ENERGY INTO ELECTRIC AND
MECHANICAL POWER.
AD- 668 203 * * *

FTD-TT-61-479
ENERGY, ITS SOURCES ON EARTH
AND ITS ORIGIN. PART IV.
AD- 410 932 * * *

FTD-TT-64-1325
EARTHLY SUN OBEY.
(TT-65-61995)
AD- 614 023 * * *

TT 61 399
A MOTOR CONNECTED TO THE SUN
AD- 271 829 * * *

TT 62 972
SOLAR BATTERIES OF THE FUTURE
AD- 286 578 * * *

*FOREST PRODUCTS LAB MADISON WIS
FSRP-FPL-317
Energy Efficiency in Light-
Frame Wood Construction.
ELE-FOR

CORP AUTHOR-MONITOR AGENCY-9
UNCLASSIFIED ZOM09

UNCLASSIFIED

AD- 648 011

*HUGHES AIRCRAFT CO LOS ANGELES CALIF
SPACE AND COMMUNICATIONS GROUP

High Efficiency GaAs Solar Cell
Development.
(AFAPL-TR-79-96)
AD-A066 616

*INFORMATICS INC ROCKVILLE MD

Solar Energy.
(AFOSR-TR-74-0600)
AD- 778 846

*INTERTE INOLOGY CORP WARRENTON VA

ITC-260675
Feasibility of Meeting the
Energy Needs of Army Bases with
Self-Generated Fuels Derived from
Solar Energy Plantations.
AD-A031 163

ITC-260675-APP
Feasibility of Meeting the
Energy Needs of Army Bases with
Self-Generated Fuels Derived from
Solar Energy Plantations
(Appendices A, B, and C).
AD-A031 164

*IOWA UNIV IOWA CITY DEPT OF PHYSICS
AND ASTRONOMY

Characteristics of Electron and
High-Energy Proton Flares.
AD- 762 848

U. OF IOWA 72-2
Direct Observations of Low-
Energy Solar Electrons Associated
with a Type III Solar Radio Burst.
AD- 738 925

U. OF IOWA-78-15
High Resolution Spectrograms of
Ion-Acoustic Waves in the Solar
Wind.
AD-A054 912

*JET PROPULSION LAB PASADENA CALIF

JPL-5040-27-VOL-1
Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems. Program
Documentation, Volume I. Software
Requirements Document.
(USCG-D-11-77-VOL-1)
AD-A047 925

JPL-5040-27-VOL-2-CHANGE-1
Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems Program
Documentation, Volume II - User's
Manual.
(USCG-D-11-77-VOL-2)
AD-A047 356

JPL-5040-27-VOL-3-CHANGE 1
Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems Program
Documentation, Volume III -
Programmer's Manual.
(USCG-D-11-77-VOL-3)
AD-A047 542

*JOHNS HOPKINS UNIV LAUREL MD APPLIED
PHYSICS LAB

SCIENTIFIC-
Prediction of Solar Energetic
Particle Event Histories Using Real-
Time Particle and Solar Wind
Measurements.
(AFGL-TR-76-0136)
AD-A029 057

*JOHNS HOPKINS UNIV SILVER SPRING MD
APPLIED PHYSICS LAB

APL-TC-950
SOLAR CELL POWER SYSTEMS FOR
APL SATELLITES.
AD- 668 144

APL-TC-978
DODGE SATELLITE POWER SYSTEM.
AD- 669 994

CORP AUTHOR-MONITOR AGENCY-11
UNCLASSIFIED ZOM09

*JOINT PUBLICATIONS RESEARCH SERVICE
WASHINGTON DC

16683
SOLAR ELECTRIC POWER STATIONS
AD- 299 207

*LIBRARY OF CONGRESS WASHINGTON DC
AEROSPACE TECHNOLOGY DIV

ATD-66-134
DIRECT ENERGY CONVERSION IN THE
USSR, SOVIET SOLAR CONCENTRATORS:
COMPREHENSIVE REPORT.
(ITT-67-62078)
AD- 653 184

*LITTLE (ARTHUR D) INC CAMBRIDGE MASS

ADL-C-79516-F
Preliminary Design of a 10 kwe
Solar Heated Open Brayton-Cycle
Engine. Phase I.
(CEL-CR-78-003)
AD-A051 101

ADL-C-79679
Solar Air - Conditioning Study.
(CEL-CR-77-018)
AD-A043 951

*LOCKHEED MISSILES AND SPACE CO
SUNNYVALE CALIF

LVSC-A700140
PROGRAM ROE (REFLECTOR ORBITAL
EXPERIMENT). PART V. INVESTIGATION
OF TEST PROGRAMS FOR SOLAR
COLLECTOR MATERIALS.
(AFAPL-TR-64-132-PT-5)
AD- 813 123

LMSC-A858074-VOL-1
SPACE LINKAGE SYSTEM.
ANALYTICAL STUDY AND PRELIMINARY
DESIGN. VOLUME I.
(AFAPL-TR-67-53-VOL-1)
AD- 816 039

LMSC-A858074-VOL-2

HUG-LOC

UNCLASSIFIED

SPACE LINKAGE SYSTEM.
ANALYTICAL STUDY AND PRELIMINARY
DESIGN. VOLUME II. APPENDIXES.
(AFAPL-TR-67-53-VOL-2)
AD- 816 040

*MASSACHUSETTS INST OF TECH LEXINGTON
LINCOLN LAB * * *

JA-4431
Transparent Heat-Mirror Films
of TiO₂/Ag/TiO₂ for Solar Energy
Collection and Radiation
Insulation.
(ESD-TR-74-363)
AD-A007 892 * * *

JA-4487
Properties of Sn-Doped In₂O₃
Films Prepared by RF Sputtering.
(ESD-TR-75-345)
AD-A024 234 * * *

JA-4555
Transparent Heat Mirrors for
Solar-Energy Applications.
(ESD-TR-76-173)
AD-A027 105 * * *

JA-4567
Thin-Film Conducting Microgrids
as Transparent Heat Mirrors.
(ESD-TR-76-174)
AD-A027 110 * * *

JA-4802
Simplified Fabrication of GaAs
Homojunction Solar Cells with
Increased Conversion Efficiencies.
(ESD-TR-78-94)
AD-A058 281 * * *

JA-4854
Solar Cells: Plugging into the
Sun.
(ESD-TR-78-385)
AD-A069 319 * * *

JA-4880
Electrode Materials for the
Photoelectrolysis of Water.

(ESD-TR-78-388)
AD-A069 424 * * *

MS-4590
Selective-Black Absorbers using
Sputtered Cermet Films.
(ESD-TR-78-379)
AD-A069 423

*METEORLOGY RESEARCH INC ALTADENA
CALIF

Project ASTRO: An
Investigation of the Use of Solar
Heating to Improve the Performance
of Polyurethane Balloons.
AD- 762 803

*MICHIGAN UNIV ANN ARBOR DEPT OF
MATERIALS AND METALLURGICAL
ENGINEERING * * *

Report of the Materials
Research Council (1973).
AD- 771 302 * * *

Preliminary Reports, Memoranda
and Technical Notes of the
Materials Research Council Summer
Conference Held at La Jolla,
California, July, 1973. Volume II.
Proceedings of the Discussion Group
on Solar Energy Conversion.
AD- 777 737

*NATIONAL ACADEMY OF SCIENCES-NATIONAL
RESEARCH COUNCIL WASHINGTON D C

Conference on Thermodynamics
and National Energy Problems Held
at Airline House, Warrenton,
Virginia on Jun 10-12, 1974.
AD-A012 702

*NATIONAL BUREAU OF STANDARDS
WASHINGTON D C INST FOR APPLIED
TECHNOLOGY * * *

NBSIR-77-1238
Technical Guidelines for Energy
Conservation.

CORP AUTHOR-MONITOR AGENCY-12
UNCLASSIFIED ZOM03

IAFCEC-TR-77-12)
AD-A04, 668

*NATIONAL RESEARCH CORP CAMBRIDGE
MASS

TDR2 600
DEVELOPMENT OF A PHOTOEMISSIVE
SOLAR ENERGY CONVERTER
(ASD-TDR62 600)
AD- 288 650

*NAVAL ACADEMY ANNAPOLIS MD ENERGY-
ENVIRONMENT STUDY GROUP

USNA-EPRD-121
Solar Heating Feasibility
Study.
AD-A025 465

USNA-EPRD-20
Feasibility of Heating Domestic
Hot Water for Apartments with Solar
Energy.
AD-A028 418

*NAVAL ACADEMY ANNAPOLIS MD
ENVIRONMENTAL PROTECTION RESEARCH
AND DEVELOPMENT TEAM

USNA-EPRD-13
Cost Benefit of Utilizing
Thermal Storage for Peak Cooling
Power Leveling.
AD-A017 297

*NAVAL CIVIL ENGINEERING LAB PORT
HUENEME CALIF * * *

NCEL-TR-163
JNFUELED POWER SUPPLY FOR
ISOLATED BARRIES ON SEA ICE
AD- 263 905

*NAVAL OCEAN SYSTEMS CENTER SAN DIEGO
CA

NOSC/TR-359
Performance of Photovoltaic
Cells in an Undersea Environment.
AD-A066 385

MAS-NAV

[The page contains extremely faint, illegible markings that appear to be bleed-through from the reverse side of the document.]

UNCLASSIFIED

R-1798-ARPA
The Potential of Indigenous
Energy Resources for Remote
Military Bases.
AD-A022 829

* REED RESEARCH INC WASHINGTON D C
Study of Solar-Energy Use in
Marine Navigation Aids.
AD- 786 935

* ROYAL AIRCRAFT ESTABLISHMENT
FARNBOROUGH (ENGLAND)
RAE-TR-74159
Work in UK on the Applications
of Solar Cells in Space.
(DRIC-BR-44999)
AD-A011 084

* SCIENCE APPLICATIONS INC WCLEAN VA
SAI-78-540-WA-VOL-3
Experimental Studies of Soil
Thermal Irradiation. Volume III.
Design of Flux Diversion Equipment
for Soil Irradiation Testing.
(DNA-4484F-3)
AD-A058 304

* SHARED BIBLIOGRAPHIC INPUT EXPERIMENT
SBIE-AD-E300 289
Experimental Studies of Soil
Thermal Irradiation. Volume III.
Design of Flux Diversion Equipment
for Soil Irradiation Testing.
AD-A058 304

SBIE-AD-E400 363
The Application of DC-DC Energy
Conversion in a Solar Energy
System.
AD-A077 112

* SOLAREX CORP ROCKVILLE MD
Nonreflecting Vertical Junction
Silicon Solar Cell Optimization.
(AFAPL-TR-77-38)

AD-A046 150
Nonreflecting Vertical Junction
Silicon Solar Cell Optimization.
(AFAPL-TR-78-91)
AD-A064 431

* SPACE AND MISSILE SYSTEMS
ORGANIZATION LOS ANGELES CA
SAWSO-TR-70-30
PROPAGATION OF SOLAR PARTICLES
TO THE POLAR CAPS.
AD- 701 739

SAWSO-TR-71-318
Rapid Access of Solar Electrons
to the Polar Caps.
AD- 736 430

SAWSO-TR-71-320
Solar Photoabsorption and
Thermal Processes in the Polar
Thermosphere.
AD- 735 305

SAWSO-TR-72-116-VOL-1
Annual and Sub-Annual Effects
of EUV (Extreme Ultraviolet)
Heating. Volume I. Harmonic
Analysis.
AD- 745 305

SAWSO-TR-72-116-VOL-2
Annual and Sub-Annual Effects
of EUV (Extreme Ultraviolet)
Heating. Volume II. Comparison
with Density Observations.
AD- 745 309

SAWSO-TR-72-159
The Aerospace Corporation Space
Science Program Report to COSPAR CY
1971.
AD- 746 526

SAWSO-TR-73-257
Experimental Evidence for the
Connection between the Geomagnetic
and the Interplanetary Fields as
Determined from Observations of
CORP AUTHOR-MONITOR AGENCY-14
UNCLASSIFIED ZOWG3

Energetic Solar Particles.
AD- 766 715

SAWSO-TR-73-347
Solar Electron Access to the
Magnetosphere.
AD- 770 319

SAWSO-TR-78-6
Satellite Observations of
Polar, Magnetotail Lobe, and
Interplanetary Electrons at Low
Energies.
AD-A050 640

SAWSO-TR-79-65
Environmental Factors of Power
Satellites.
AD-A072 308

* SPACE AND MISSILE SYSTEMS
ORGANIZATION LOS ANGELES CALIF
SAWSO-TR-77-179
Solar-Powered Laser
Communications System for Space.
AD-A046 763

* SPACE SYSTEMS DIV LOS ANGELES AFS CA
SSD-TR-67-89
SOLAR CELL POWER SYSTEMS FOR
AIR FORCE SATELLITES.
AD- 654 285

SSD-TR-67-132
AN EVALUATION AND COMPARISON OF
POWER SYSTEMS FOR LONG-DURATION,
MANEUVRED SPACE VEHICLES.
AD- 820 856

* SPECTROLAB INC SYLMAR CALIF
High Efficiency Solar Panel
(HESP).
(AFAPL-TR-77-36)
AD-A043 382

High Efficiency Solar Panel
(HESP-II).
(AFAPL-TR-78-60)

REE-SPE

UNCLASSIFIED

AD-A065 009	Low Resistivity-High Minority Carrier Lifetime Single Crystal Silicon Investigation. (AFAPL-TR-79-2031) AD-A077 684	AD-A047 842	Fact Book. AD-A033 138
380-4686F	Low Reflectivity Solar Cells. (AFAPL-TR-75-98) AD-A025 922	*TAPCO DIV THOMPSON RAMO WOOLDRIDGE INC INGLEWOOD CALIF	TI-A-872-77-316 U.S. Navy Energy R and D Progress October 1976-March 1977. AD-A039 546
CORP BEDFORD MA	Low Temperature Fabrication of High Efficiency Silicon Solar Cells. (AFAPL-TR-77-86) AD-A061 956	LONG-LIFE THERMIONIC CONVERTERS FOR SOLAR POWER SYSTEMS (ASD-TR62 1069) AD- 299 004	*TEXAS INSTRUMENTS INC DALLAS SEMICONDUCTOR GROUP
*STANFORD RESEARCH INST MENLO PARK CALIF	SRI-EGU-2513-VOL-1 Assessment of Total Energy Systems for the Department of Defense - Volume 1. AD- 781 816	TECHNICAL OPERATIONS INC BURLINGTON MASS	TI-03-75-41 Development of Vertical Multi-junction Solar Cells for Spacecraft Primary Power. Volume II. (AFAPL-TR-74-45-VOL-2) AD-A025 719
*STANFORD UNIV CA INST FOR PLASMA RESEARCH	SU-IPR-780 Is the Galactic Corona Produced by Galactic Flares. AD-A076 612	TETRA TECH INC ARLINGTON VA	*TEXTRON ELECTRONICS INC SYLMAR CALIF HELIOTEK DIV
*STANFORD UNIV CALIF INST FOR PLASMA RESEARCH	SU-IPR-809 An Observational Search for Large-Scale Organization of Five-Minute Oscillations on the Sun.	TETRA-A-463-76-248 Analysis of the Technical and Cost Feasibility of Solar and/or Wind Energy Systems for Coast Guard Public Quarters. (USCG-D-80-76) AD-A028 332	HIGH EFFICIENCY SILICON SOLAR CELLS. AD- 409 001
		TETRA-A-642-75-121 Proposal Evaluation - Ocean Thermal Gradients and Solar Ponds. AD-A022 080	*TRACOR MARINE PORT EVERGLADES FL OCEAN TECHNOLOGY DIV
		TETRA-A-642-75-130 Absorption Air Conditioning. AD-A022 079	TRACOR-726171 A Preliminary Design, Economic and Energy Analysis, and Environmental Impact Assessment for a Seawater Cooling Project Naval Security Group Facilities at Winter Harbor, Maine. (CEL-CR-78-008) AD-A056 603
		TETRA-A-642-77-306 Energy Fact Book-1977. AD-A038 802	*TRAPELO/WEST RICHMOND CALIF
		TETRA-A-938-78-361 U.S. Navy Energy R and D Progress. 1977. AD-A053 428	ILW-60EC A Study of Conventional and Unconventional RADIAC Power Sources. AD- 721 662
			*TRW INC CLEVELAND OHIO
			DESIGN STUDY FOR ADVANCED SOLAR THERMIONIC POWER SYSTEMS. ITEM II.
			SPI-TRW

UNCLASSIFIED

PART I. VAPOR TYPE THERMIONIC
GENERATOR
AD- 267 330

*TUFTS UNIV MEDFORD MASS DEPT OF
PHYSICS

SCIENTIFIC-1

Very Large Array (V.L.A.)
Observations of Solar Active
Regions.
(AFGL-TR-79-0037)
AD-A066 780

*UTAH UNIV SALT LAKE CITY DEPT OF
CHEMISTRY

TR-16

'Water Splitting' by Titanium
Exchanged Zeolite A.
AD-A059 131

*VIRGINIA UNIV CHARLOTTESVILLE DEPT
OF CHEMISTRY

The Step Excitation Method for
Studying Reversible Excited-State
Electron-Transfer Reactions:
Experimental Realization,
(AFOSR-TR-79-1077)
AD-A078 144

*WESTINGHOUSE ELECTRIC CORP BALTIMORE
MD

3845.2

P PHOTOEMISSION SOLAR ENERGY
CONVERTER
(ARPA-80 59)
AD- 264 828

TDR62 10211183A

PHOTOEMISSIVE ENERGY CONVERSION
APPLIED RESEARCH PROGRAM
(ASD-TDR62 1021)
AD- 294 000

*WESTINGHOUSE ELECTRIC CORP LIMA OHIO

SOLAR THERMOELECTRIC GENERATOR

SYSTEM CONCEPT AND FEASIBILITY
STUDY.

AD- 415 024

*WISCONSIN UNIV MADISON SOLAR ENERGY
LAB

PHOTOVOLTAIC POWER SYSTEMS
USING HIGH SOLAR ENERGY FLUXES.
AD- 629 241

*XEROX CORP/ELECTRO-OPTICAL SYSTEMS
PASADENA CALIF

4074-VOL-1

Solar Collector Thermal Power
System. Volume I. Preliminary
Technology Systems Study.
(AFAPL-TR-74-89-1)
AD-A000 940

4074-VOL-2

Solar Collector Thermal Power
System. Volume II. Development,
Fabrication, and Testing of Fifteen
Foot Heat Pipes.
(AFAPL-TR-74-89-2)
AD-A000 941

CORP AUTHOR-MONITOR AGENCY-16
UNCLASSIFIED ZOM09

TUF-XER

UNCLASSIFIED

SUBJECT INDEX

- **ABSORBERS (MATERIALS)**
 Reprint: Selective-Black
 Absorbers Using Sputtered Cermet
 Films.
 AD-A069 423
- **ABSORPTION**
 Absorption Air Conditioning.*
 AD-A022 079
- **ACOUSTIC WAVES**
 High Resolution Spectrograms of
 Ion-Acoustic Waves in the Solar
 Wind.*
 AD-A054 912
- **AIR**
 Analysis of the Technical and
 Cost Feasibility of Solar and/or
 Wind Energy Systems for Coast Guard
 Public Quarters.*
 AD-A028 332
- **AIR CONDITIONING EQUIPMENT**
 Absorption Air Conditioning.*
 AD-A022 079
- Heating and Cooling Solar
 System
 Performance.*
 AD-A026 041
- Solar Air - Conditioning Study.
 *
 AD-A043 951
- A Preliminary Design, Economic
 and Energy Analysis, and
 Environmental Impact Assessment for
 a Seawater Cooling Project Naval
 Security Group Facilities at Winter
 Harbor, Maine.*
 AD-A056 603
- **AIR FORCE FACILITIES**
 Alternative Energy Sources for
 United States Air Force
 Installations.*
 AD-A014 858
- Technical Guidelines for Energy
 Conservation.*
 AD-A041 668
- Second Interim Technical Report
 on USAFA Solar Test House.*
- AD-A045 042
- **AIR FORCE PLANNING**
 Alternative Energy Sources for
 United States Air Force
 Installations.*
 AD-A014 858
- **ANNEALING**
 Low Temperature Fabrication of
 High Efficiency Silicon Solar
 Cells.*
 AD-A061 956
- **ANTHRACENES**
 Photon Energy Storage in Organic
 Materials: The Case of Linked
 Anthracenes.*
 AD-A039 702
- Photoisomerization of Bis(9-
 Anthryl)Methane and other Linked
 Anthracenes. The Role of Excimers
 and Biradicals in
 Photodimerization.*
 AD-A051 336
- **ANTIREFLECTION COATINGS**
 Low Reflectivity Solar Cells.*
 AD-A025 922
- **ASTRONAUTICS**
 MARS PROBES
 FEASIBILITY STUDY OF AN ION-
 PROPELLED MARS ORBITER/LANDER
 SPACECRAFT WITH SOLAR PHOTOVOLTAIC
 POWER. VOLUME II. MISSION
 ANALYSIS.*
 AD- 804 110
- FEASIBILITY STUDY OF AN ION-
 PROPELLED MARS ORBITER/LANDER
 SPACECRAFT WITH SOLAR PHOTOVOLTAIC
 POWER. VOLUME III. SPACECRAFT
 DESIGN.*
 AD- 804 111
- **ASTROPHYSICS**
 Is the Galactic Corona Produced
 by Galactic Flares.*
 AD-A076 612
- **ATMOSPHERE MODELS**
- Reprint: A Two-Dimensional
 Global Climatic Model.
 AD-A028 548
- **AUXILIARY POWER PLANTS**
 Survivability of Remote Site
 Alternate Energy Systems. Volume I.
 Survivability Analysis.*
 AD-A078 118
- **SPACECRAFT**
 Solar flat plate thermoelectric
 generator research.
 AD- 418 322
- **BARRACKS**
 Market Evaluation Study: Solar
 Domestic Water Heaters for DOD
 barracks.*
 AD-A036 479
- **BATTERIES AND COMPONENTS**
 SYMPOSIA
 Proceedings, annual power
 sources conference (14th). 17-19
 May 1960.
 AD- 607 425
- **BIBLIOGRAPHIES**
 Solar Energy.*
 AD-A038 600
- **BOILERS**
 THERMAL STABILITY
 DETERMINATION OF CAUSE OF
 PRESSURE SURGE ASSOCIATED WITH
 LITHIUM-FLUORIDE STEAM HEAT
 RECEIVER.*
 AD- 839 951
- **BRAYTON CYCLE**
 Preliminary Design of a 10 kWe
 Solar Heated Open Brayton-Cycle
 Engine. Phase I.*
 AD-A051 101
- **BUILDINGS**
 Solar Heating and Cooling of
 Buildings Study Conducted for
 Department of the Army. Volume II.
 Technical Report.*

SUBJECT INDEX-1
 UNCLASSIFIED ZOM09

UNCLASSIFIED

AD-A002 563
Solar Heating and Cooling of
Buildings Study Conducted for
Department of the Army. Volume I:
Executive Summary and
Implementation Plans.*
AD-A002 576
Energy Conservation in
Buildings.*
AD-A034 141
Technical Guidelines for Energy
Conservation..*
AD-A041 668
Field Test of Building Energy
Analysis Tools and Procedures.*
AD-A055 095

*CADMIUM COMPOUNDS
CADMIUM SULFIDE SOLAR GENERATOR*
AD- 099 917

*CADMIUM SULFIDES
CADMIUM SULFIDE SOLAR GENERATOR*
AD- 066 783

*CALIFORNIA
California's Energy Future.*
AD-A032 221

*CERMETS
Reprint: Selective-Black
Absorbers using Sputtered Cermet
Films.
AD-A069 423

*CHARGE CARRIERS
Low Resistivity-High Minority
Carrier Lifetime Single Crystal
Silicon Investigation.*
AD-A077 684

*CHARGED PARTICLES
POLAR REGIONS
PROPAGATION OF SOLAR PARTICLES
TO THE POLAR CAPS.*
AD- 701 739

*CHEMICAL ENGINEERING
SPACE STATIONS
Reprint: Industrial Chemistry
in Space.

AD- 720 136

*CLIMATE
Reprint: A Two-Dimensional
Global Climatic Model.
AD-A028 548

*COATINGS
The Possibilities of Selective
Glass -- Translation.
AD-A065 845

*COLLECTION
Solar Energy Design Improvement:
A Methodology for Hydronic Flat
Plate Collector Systems.*
AD-A076 836

*COMMERCIAL EQUIPMENT
An Attitudinal Study of the Home
Market for Solar Devices.*
AD-A045 082

*COMMUNICATION AND RADIO SYSTEMS
Influence of the Solar Electron
Energy Distribution on the
Microwave Spectrum of Gyro-
Synchrotron Radiation.*
AD-A022 977

*COMPUTER AIDED DESIGN
Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems. Program
Documentation, Volume I. Software
Requirements Document.*
AD-A047 925

*COMPUTER PROGRAM DOCUMENTATION
Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems Program
Documentation, Volume II - User's
Manual.*
AD-A047 356

Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems. Program
Documentation, Volume I. Software
Requirements Document.*
AD-A047 925

*COMPUTER PROGRAMS
Field Test of Building Energy
Analysis Tools and Procedures.*
AD-A055 095

*COMPUTERIZED SIMULATION
Design of Solar Heating and
Cooling Systems.*
AD-A062 719

*CONSTRUCTION
Energy Efficiency in Light-Frame
Wood Construction.*
AD-A071 676

*COOLING
Interim Feasibility Assessment
Method for Solar Heating and
Cooling of Army Buildings.*
AD-A026 588
Design of Solar Heating and
Cooling Systems.*
AD-A062 719

*COST ANALYSIS
An Attitudinal Study of the Home
Market for Solar Devices.*
AD-A045 082
Design of Solar Heating and
Cooling Systems.*
AD-A062 719

*COST EFFECTIVENESS
Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems Program
Documentation, Volume II - User's
Manual.*
AD-A047 356

*CRYSTAL GROWTH
SOLAR FURNACES
Reprint: Thoria single crystals
grown by vapor deposition in a
solar furnace.
AD- 652 752

*DC TO DC CONVERTERS
The Application of DC-DC Energy
Conversion in a Solar Energy
System.*

SUBJECT INDEX-2
UNCLASSIFIED 20M09

CAD-DC

UNCLASSIFIED

- AD-A077 112
 *DREDGED MATERIALS
 Identification of Alternative Power Sources for Dredged Material Processing Operations.*
 AD-A048 312
- *ECONOMIC ANALYSIS
 Market Evaluation Study: Solar Heating and Domestic Hot Water Heating in DOD Buildings.*
 AD-A042 178
- *ELECTRIC BATTERIES
 Computer Program for Design and Performance Analysis of Navigation-Aid Power Systems. Program Documentation, Volume I. Software Requirements Document.*
 AD-A047 925
 Survivability of Remote Site Alternate Energy Systems. Volume I. Survivability Analysis.*
 AD-A078 118
- *ELECTRIC POWER PLANTS
 Proposal Evaluation - Ocean Thermal Gradients and Solar Ponds.*
 AD-A022 080
- *ELECTRIC POWER PRODUCTION
 A SPLITTER OF THE SUN.
 AD- 255 389
 OPTIC IN INSTALLATIONS FOR THE UTILIZATION OF SOLAR ENERGY.
 AD- 255 309
 PHOTOEMISSION SOLAR ENERGY CONVERTER*
 AD- 264 828
 INVESTIGATION OF SOLAR CONCENTRATING PHOTOVOLTAIC POWER GENERATORS*
 AD- 264 989
 SOLAR ORIENTING DEVICE FOR EXPANDABLE FLAT-PANEL ARRAY*
 AD- 273 551
 TEMPERATURE CONTROL TECHNIQUE FOR SOLAR ENERGY CONVERTERS*
 AD- 274 922
 DEVELOPMENT OF A PHOTOEMISSIVE
- SOLAR ENERGY CONVERTER.
 AD- 289 650
 LONG-LIFE THERMIONIC CONVERTERS FOR SOLAR POWER SYSTEMS. EFFORTS ARE DIRECTED TOWARDS INCREASING THE LIFE CYCLE OF SOLAR THERMIONIC GENERATORS. SPECIALIZED EQUIPMENT, TECHNIQUES, AND DESIGN DETAILS ARE PRESENTED.
 AD- 299 004
 SOLAR ELECTRIC POWER STATIONS*
 AD- 299 207
 Annual International Seminar of the International Centre for Heat and Mass Transfer (8th).*
 AD-A020 466
 The Potential of Indigenous Energy Resources for Remote Military Bases.*
 AD-A022 829
 Solar Electric Generating System Resource Requirements and the Feasibility of Orbiting Solar Reflectors.*
 AD-A048 908
 USAF Terrestrial Energy Study. Volume III. Part 2. Energy Conversion Systems Handbook.*
 AD-A057 252
 Digest of Equipment for Converting Solar, Wind, and Geothermal Energy into Electric Power for USN Application Ashore.*
 AD-A066 221
 Analysis of Remote Site Energy Storage and Generation Systems.*
 AD-A074 869
- ENERGY CONVERSION
 Solar and Wind Power to Be Harnessed--Translation.
 AD- 765 783
- SATELLITES(ARTIFICIAL)
 SOLAR CELL POWER SYSTEMS FOR APL SATELLITES.*
 AD- 668 144
- SYMPOSIA
 Proceedings, annual power sources conference (14th), 17-19
- SOLAR ENERGY CONVERTER.
 AD- 607 425
 May 1960.
 *ELECTRIC PROPULSION
 MARS PROBES
 FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME II. MISSION ANALYSIS.*
 AD- 804 110
- *ELECTRON BEAMS
 Low Temperature Fabrication of High Efficiency Silicon Solar Cells.*
 AD-A061 956
- *ELECTRON FLUX
 Satellite Observations of Polar, Magnetotail Lobe, and Interplanetary Electrons at Low Energies.*
 AD-A050 640
- *ELECTRON TRANSPORT
 Reprint: The Step Excitation Method for Studying Reversible Excited-State Electron-Transfer Reactions: Experimental Realization.
 AD-A078 144
- *ENERGY
 Energy from the Ocean: An Appraisal.*
 AD- 779 877
 Assessment of Total Energy Systems for the Department of Defense - Volume 1.*
 AD- 781 816
 Assessment of Total Energy Systems for the Department of Defense. Volume 2. Appendices.*
 AD- 781 817
 Proceedings of Annual Symposium 'Energy Research and Development' (5th) on 13-14 March 1974, Sponsored by the American Defense Preparedness Association.*
 AD-A007 799

SUBJECT INDEX-3
 UNCLASSIFIED ZOM09

DRE-ENE

UNCLASSIFIED

Technical Review and Analysis of National Energy Research and Development Programs and Proposals (Phase II).*

AD-A008 887

Projections of Energy Availability, Cost, and Aggregate Demand for 1975, 1980, 1985 and 1990.*

AD-A010 712

Annual International Seminar of the International Centre for Heat and Mass Transfer (8th).*

AD-A020 466

Review and Analysis of National Energy Research and Development Programs and Proposals.*

AD-A020 794

Energy and Physics--General Conference of the European Physical Society (3rd) Held in Bucharest (Romania) on 9-12 September 1975.*

AD-A026 052

Fact Book-1977.*

AD-A039 546

U.S. Nav, Energy R and D Progress October 1976-March 1977.*

Net Energy Analysis Model for the Evaluation of a Solar Heating, Ventilation and Air Conditioning System.*

AD-A047 433

USAF Terrestrial Energy Study. Volume III, Part 2. Energy Conversion Systems Handbook.*

AD-A057 252

Department of the Navy Energy Fact Book.*

AD-A069 138

SOURCES

Energy sources on earth.

AD- 410 932

*ENERGY CONSERVATION

The Potential of Indigenous Energy Resources for Remote Military Bases.*

AD-A022 829

Energy Conservation in

Buildings.*

AD-A034 141

U.S. Navy Energy R and D Progress October 1976-March 1977.*

AD-A039 546

Technical Guidelines for Energy Conservation.*

AD-A041 668

U.S. Navy Energy R and D Progress, 1977.*

AD-A053 428

Department of the Navy Energy Fact Book.*

AD-A069 138

Energy Efficiency in Light-Frame Wood Construction.*

AD-A071 676

*ENERGY CONVERSION

Preliminary Reports, Memoranda and Technical Notes of the Materials Research Council Summer Conference Held at La Jolla, California, July, 1973. Volume II. Proceedings of the Discussion Group on Solar Energy Conversion.*

AD- 777 737

Navy Applications for Terrestrial Photovoltaic Solar Power.*

AD-A030 529

Feasibility of Meeting the Energy Needs of Army Bases with Self-Generated Fuels Derived from Solar Energy Plantations.*

AD-A031 163

Feasibility of Meeting the Energy Needs of Army Bases with Self-Generated Fuels Derived from Solar Energy Plantations (Appendices A, B, and C).*

AD-A031 164

Solar Energy.*

AD-A038 600

Photon Energy Storage in Organic Materials: The Case of Linked Anthracenes.*

AD-A039 702

Efficiencies of Various Methods for Solar Energy Conversion.*

AD-A042 584

Solar Air - Conditioning Study.

AD-A043 951

Solar Energy for the Naval Shore Establishment.*

AD-A050 026

USAF Terrestrial Energy Study. Volume III, Part 2. Energy Conversion Systems Handbook.*

AD-A057 252

The Application of DC-DC Energy Conversion in a Solar Energy System.*

AD-A077 112

PHOTOELECTRIC CELLS (SEMICONDUCTOR)

Theoretical and experimental study of components for a portable thermophotovoltaic energy converter.

AD- 431 557

POWER SUPPLIES

POWER SOURCES CONFERENCE (16th ANNUAL), HELD 22-24 MAY 1962. PROCEEDINGS.*

AD- 696 421

POWER SOURCES CONFERENCE (17th ANNUAL), HELD 21-23 MAY 1963. PROCEEDINGS.*

AD- 696 422

POWER SOURCES CONFERENCE (18th ANNUAL), HELD 19-21 MAY 1964. PROCEEDINGS.*

AD- 696 423

POWER SOURCES CONFERENCE (19th ANNUAL), HELD 18-20 MAY 1965. PROCEEDINGS.*

AD- 696 424

POWER SOURCES CONFERENCE (20th ANNUAL), HELD 24-25-26 MAY 1966. PROCEEDINGS.*

AD- 696 425

REVIEWS

Direct conversion of various forms of energy into electric and mechanical power--Translation.

AD- 668 263

SCIENTIFIC RESEARCH

SUBJECT INDEX-4

UNCLASSIFIED ZOM03

ENE-ENE

UNCLASSIFIED

Research in energy conversion:
Photovoltaic, thermoelectric,
thermionic, and photochemical
phenomena.
AD- 429 505

SOLAR CELLS
Photovoltaic power systems using
high solar energy fluxes.
AD- 629 241

SOLAR RADIATION
Contemporary Status of Studies
on Direct Conversion of Solar
Energy to Electrical Energy--
Translation.
AD- 747 293

*ENERGY MANAGEMENT
Alternative Strategies for
Optimizing Energy Supply,
Distribution, and Consumption
Systems on Naval Bases. Volume II.
Advanced Energy Conservation
Strategies.*
AD- 786 757

Conference on Thermodynamics and
National Energy Problems Held at
Airlie House, Warrenton, Virginia
on Jun 10-12, 1974.*
AD-A012 702

California's Energy Future.*
AD-A032 221
Energy Fact Book-1977.*
AD-A038 802

Technical Guidelines for Energy
Conservation.*
AD-A041 668
U.S. Navy Energy R and D
Progress, 1977.*
AD-A053 428

Field Test of Building Energy
Analysis Tools and Procedures.*
AD-A055 095

*ENERGY STORAGE
Cost Benefit of Utilizing
Thermal Storage for Peak Cooling
Power Leveling.*
AD-A017 297

The Potential of Indigenous

Energy Resources for Remote
Military Bases.*
AD-A022 829

Solar Energy Storage.*
AD-A028 083

Feasibility of Meeting the
Energy Needs of Army Bases with
Self-Generated Fuels Derived from
Solar Energy Plantations.*
AD-A031 163

Feasibility of Meeting the
Energy Needs of Army Bases with
Self-Generated Fuels Derived from
Solar Energy Plantations
(Appendices A, B, and C).*

AD-A031 164
Photon Energy Storage in Organic
Materials: The Case of Linked
Anthracenes.*
AD-A039 702

Analysis of Remote Site Energy
Storage and Generation Systems.*
AD-A074 869

Energy Storing Organic
Photoreactions.*
AD-A074 915

Photosensitization Mechanisms
for Energy Storing Isomerizations.*
AD-A074 938

*ENVIRONMENTAL IMPACT STATEMENTS
Environmental Factors of Power
Satellites.*
AD-A072 308

*EXPANDED PLASTICS
THERMAL INSULATION
The Application of phenol-
Formaldehyde Plastic Foam as
Thermal Insulation for Solar Water
Heaters--Translation.
AD- 756 591

*EXPERIMENTAL DESIGN
Solar Energy Design Improvement:
A Methodology for Hydronic Flat
Plate Collector Systems.*
AD-A076 836

*FERROELECTRIC MATERIALS
Large Polarization Dependent

Voltages in Ferroelectric
Ceramics.*
AD- 785 608

*FILMS
Reprint: Transparent Heat-
Mirror Films of TiO2/Ag/TiO2 for
Solar Energy Collection and
Radiation Insulation.
AD-A007 892

*FLAT PLATE MODELS
Solar Energy Design Improvement:
A Methodology for Hydronic Flat
Plate Collector Systems.*
AD-A076 836

*FOREIGN TECHNOLOGY
The Possibilities of Selective
Glass -- Translation.
AD-A065 845

European Scientific Notes.
Volume 33. Number 7.*
AD-A075 097

*FUEL CELLS
ENERGY CONVERSION RESEARCH
PROGRAM. DIRECT CONVERSION OF
CHEMICAL ENERGY TO ELECTRICAL
ENERGY. PROTOTYPE FUEL CELLS
EMPLOYING CL AS OXIDANT, PCL3 AS
FUEL AND CH3COON AS THE SOLVENT
WERE INVESTIGATED.
PYROLYTIC PROCESSES FOR
REGENERATION OF REACTION PRODUCTS
WERE STUDIED.
AD- 285 084

METHODS OF CONVERTING VARIOUS
FORMS OF ENERGY, INCLUDING SOLAR
ENERGY, INTO ELECTRICAL ENERGY.
AD- 286 578

SYMPOSIA
POWER SOURCES CONFERENCE (16th
ANNUAL), HELD 22-24 MAY 1962.
PROCEEDINGS.*
AD- 696 421
POWER SOURCES CONFERENCE (17th
ANNUAL), HELD 21-23 MAY 1963.
PROCEEDINGS.*
AD- 696 422

SUBJECT INDEX-5
UNCLASSIFIED ZOM09

ENE-FUE

UNCLASSIFIED

POWER SOURCES CONFERENCE (18th ANNUAL), HELD 19-21 MAY 1964. PROCEEDINGS.*

AD- 696 423

POWER SOURCES CONFERENCE (19th ANNUAL), HELD 18-20 MAY 1965. PROCEEDINGS.*

AD- 696 424

POWER SOURCES CONFERENCE (20th ANNUAL), HELD 24-25-26 MAY 1966. PROCEEDINGS.*

AD- 696 425

*FUELS

Feasibility of Meeting the Energy Needs of Army Bases with Self-Generated Fuels Derived from Solar Energy Plantations.*

AD-A031 163

Feasibility of Meeting the Energy Needs of Army Bases with Self-Generated Fuels Derived from Solar Energy Plantations (Appendices A, B, and C).*

AD-A031 164

*GALLIUM ARSENIDES

Reprint: Simplified Fabrication of GaAs Homojunction Solar Cells with Increased Conversion Efficiencies.

AD-A058 281

*GAS GENERATING SYSTEMS

'Water Splitting' by Titanium Exchanged Zeolite A.*

AD-A059 131

*GENERATORS

CADMIUM SULFIDE SOLAR GENERATOR*

AD- 053 603

CADMIUM SULFIDE SOLAR GENERATOR*

AD- 066 783

CADMIUM SULFIDE SOLAR GENERATOR*

AD- 069 093

A CADMIUM SULFIDE SOLAR ENERGY GENERATOR*

AD- 101 783

SOLAR RADIATION

Feasibility study of solar

thermoelectric generators for space vehicles.

AD- 415 024

THERMOELECTRICITY

Performance Reliability Calculation for a Modular Solar Thermoelectric Generator-- Translation.

AD- 757 087

*GEOMAGNETISM

Reprint: Interplanetary Energy Flux Associated with Magnetospheric Substorms.

AD-A071 388

MAGNETIC FIELDS

Experimental Evidence for the Connection between the Geomagnetic and the Interplanetary Fields as Determined from Observations of Energetic Solar Particles.*

AD- 766 715

*GEOTHERMY

Digest of Equipment for Converting Solar, Wind, and Geothermal Energy into Electric Power for USN Application Ashore.*

AD-A066 221

*GLASS

The Possibilities of Selective Glass -- Translation.

AD-A065 845

*GUIDED MISSILE RANGES

Solar Cell Power for Field Instrumentation at White Sands Missile Range.*

AD-A053 960

*HANDBOOKS

ENERGY CONVERSION SYSTEMS REFERENCE HANDBOOK. VOLUME II. SOLAR-THERMAL ENERGY SOURCES.*

AD- 256 973

ENERGY CONVERSION SYSTEMS REFERENCE HANDBOOK. VOLUME V. DIRECT SOLAR CONVERSION*

SUBJECT INDEX-6

UNCLASSIFIED ZOM09

AD- 257 788
Energy Fact Book-1977.*

AD-A038 802

*HEAT PUMPS

Solar Assisted Heat Pump Study for Heating of Military Facilities.*

AD-A058 626

*HEAT RESISTANT MATERIALS

TEST METHODS

Installation for high-temperature investigations of heat-resistant aviation materials and coatings--Translation.

AD- 692 635

*HEAT TRANSFER

Annual International Seminar of the International Centre for Heat and Mass Transfer (8th).*

AD-A020 466

*HEATING PLANTS

Predicting the Performance of Solar Energy Systems.*

AD-A035 608

Technical Guidelines for Energy Conservation.*

AD-A041 668

Third Interim Technical Report on USAFA Solar Test House Design Parameters.*

AD-A060 458

*HOT WATER

Market Evaluation Study: Solar Domestic Water Heaters for DOD Barracks.*

AD-A036 479

Solar Heating of Buildings and Domestic Hot Water.*

AD-A054 601

*HOUSING (Dwellings)

Solar Heating Retrofit of Military Family Housing.*

AD-A030 843

Second Interim Technical Report on USAFA Solar Test House.*

FUE-HOU

UNCLASSIFIED

- AD-A045 042
Solar Heating of Buildings and Domestic Hot Water.*
AD-A054 601
Energy Efficiency in Light-Framed Wood Construction.*
AD-A071 676
- *HYDROGEN
'Water Splitting' by Titanium Exchanged Zeolite A.*
AD-A059 131
- *INSTRUMENTATION
Solar Cell Power for Field Instrumentation at White Sands Missile Range.*
AD-A053 960
- *ION DENSITY
High Resolution Spectrograms of Ion-Acoustic Waves in the Solar Wind.*
AD-A054 912
- *ION ENGINES
MARS PROBES
FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME II. MISSION ANALYSIS.*
AD- 804 110
- SOLAR CELLS
FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME I. SUMMARY.*
AD- 804 109
- *ION EXCHANGE
'Water Splitting' by Titanium Exchanged Zeolite A.*
AD-A059 131
- *ION IMPLANTATION
Low Temperature Fabrication of High Efficiency Silicon Solar Cells.*
AD-A061 956
- *ISOCYANATE PLASTICS
METEOROLOGICAL BALLOONS
Project ASTRO: An Investigation of the Use of Solar Heating to Improve the Performance of Polyurethane Balloons.*
AD- 762 803
- *ISOMERIZATION
Photon Energy Storage in Organic Materials: The Case of Linked Anthracenes.*
AD-A039 702
Photodimerization of Bis(9-Anthryl)methane and other Linked Anthracenes. The Role of Excimers and Biradicals in Photodimerization.*
AD-A051 336
Photosensitization Mechanisms for Energy Storing Isomerizations.*
AD-A074 968
- *ISOTOPIES
Reprint: Production of Fluorine-19 Produced H₂ and He₃.
AD-A025 033
- *LAND USE
Is the Right to Light a California Necessity.*
AD-A026 660
- *LASER COMMUNICATIONS
Reprint: Solar-Powered Laser Communications System for Space.
AD-A046 763
- *LIFE EXPECTANCY
Low Resistivity-High Minority Carrier Lifetime Single Crystal Silicon Investigation.*
AD-A077 684
- *LIGHT TRANSMISSION
PLASTICS
Study of Phototechnical Characteristics of Polymer Films Used as Transparent Coatings in Solar Water Heaters---Translation.
AD- 742 111
- *MAGNETOHYDRODYNAMICS
ENERGY CONVERSION
Translation of Russian newspaper article: Progress towards the control of nuclear reactions.
AD- 614 023
- *MAGNETOSPHERE
Solar Electron Access to the Magnetosphere.*
AD- 770 319
Reprint: Interplanetary Energy Flux Associated with Magnetospheric Substorms.
AD-A071 388
- ELECTRONS
Rapid Access of Solar Electrons to the Polar Caps.*
AD- 736 430
- SCIENTIFIC RESEARCH
The Aerospace Corporation Space Science Program Report to COSPAR CY 1971.*
AD- 746 326
- SOLAR RADIATION
Reprint: Rapid Access of Solar Electrons to the Polar Caps.
AD- 744 404
- *MANUALS
Department of the Navy Energy Fact Book.*
AD-A069 138
- *MARINE ENGINEERING
Performance of Photovoltaic Cells in an Undersea Environment.*
AD-A065 385
- *MARINE TRANSPORTATION
Study of Solar-Energy Use in Marine Navigation Aids.*
AD- 786 935
- *MARS PROBES
DESIGN
FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER

SUBJECT INDEX-7
UNCLASSIFIED ZOM09

HYD-MAR

UNCLASSIFIED

SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME III. SPACECRAFT DESIGN.*

AD- 804 111

FEASIBILITY STUDIES

FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME I. SUMMARY.*

AD- 804 109

ION ENGINES

FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME II. MISSION ANALYSIS.*

AD- 804 110

*MASS TRANSFER

Annual International Seminar of the International Centre for Heat and Mass Transfer (8th).*

AD-A020 466

*MATERIALS

Report of the Materials Research Council (1973).*

AD- 771 302

*MATHEMATICAL ANALYSIS

Computer Program for Design and Performance Analysis of Navigation-Aid Power Systems Program Documentation. Volume II - User's Manual.*

AD-A047 356

Computer Program for Design and Performance Analysis of Navigation-Aid Power Systems Program Documentation. Volume III - Programmer's Manual.*

AD-A047 542

*MATHEMATICAL MODELS

High Efficiency GaAs Solar Cell Development.*

AD-A066 616

*MEETINGS

Preliminary Reports, Memoranda and Technical Notes of the Materials Research Council Summer Conference Held at La Jolla, California, July, 1973. Volume II. Proceedings of the Discussion Group on Solar Energy Conversion.*

AD- 777 737

Proceedings of Annual Symposium 'Energy, Research and Development' (5th) on 13-14 March 1974, Sponsored by the American Defense Preparedness Association.*

AD-A007 799

Conference on Thermodynamics and National Energy Problems Held at Airline House, Warrenton, Virginia on Jun 10-12, 1974.*

AD-A012 702

Energy and Physics--General Conference of the European Physical Society (3rd) Held in Bucharest (Romania) on 9-12 September 1975.*

AD-A026 962

*METEOROLOGICAL BALLOONS

ISOCYANATE PLASTICS

Project ASTRO: An Investigation of the Use of Solar Heating to Improve the Performance of Polyurethane Balloons.*

AD- 762 803

*METHANE

Photoisomerization of Bis(9-Anthryl)methane and other Linked Anthracenes. The Role of Excimers and Biradicals in Photodimerization.*

AD-A051 336

*METHODOLOGY

Solar Energy Design Improvement: A Methodology for Hydronic Flat Plate Collector Systems.*

AD-A076 836

*MILITARY FACILITIES

The Feasibility of Solar Energy Usage on Red River Army Depot.*

AD-A025 119

Solar Heating Retrofit of Military Family, Housing.*

AD-A030 843

Solar Assisted Heat Pump Study for Heating of Military Facilities.*

AD-A058 626

*MIRRORS

INVESTIGATION OF SOLAR CONCENTRATING PHOTOVOLTAIC POWER GENERATORS*

AD- 264 989

Reprint: Transparent Heat-Mirror Films of TiO₂/Ag/TiO₂ for Solar Energy Collection and Radiation Insulation.

AD-A007 892

Reprint: Transparent Heat Mirrors for Solar-Energy Applications.

AD-A027 105

Reprint: Thin-Film Conducting Microgrids as Transparent Heat Mirrors.

AD-A027 110

*NAVAL RESEARCH

U.S. Navy Energy R and D Progress October 1976-March 1977.*

AD-A039 546

*NAVAL SHORE FACILITIES

Alternative Strategies for Optimizing Energy Supply, Distribution, and Consumption Systems on Naval Bases. Volume II. Advanced Energy Conservation Strategies.*

AD- 786 757

Solar Energy for the Naval Shore Establishment.*

AD-A050 026

A Preliminary Design, Economic and Energy Analysis, and Environmental Impact Assessment for a Seawater Cooling Project Naval Security Group facilities at Winter Harbor, Maine.*

AD-A056 603

Digest of Equipment for

SUBJECT INDEX-8
UNCLASSIFIED ZOM09

WAS-NAV

UNCLASSIFIED

Converting Solar, Wind, and
Geothermal Energy into Electric
Power for USN Application Ashore.*
AD-A066 221

*NAVIGATIONAL AIDS
Study of Solar-Energy Use in
Marine Navigation Aids.*
AD- 786 935

*NAVIGATIONAL LIGHTS
Hoffman HSPP-1 Solar Converter.*
AD- 786 384

*NEODYMIUM LASERS
Satellite Mounted Tracking
Optics to Continuously Pump Sun-
Pumped Laser.*
AD-A000 040

*NEUTRON FLUX
Upper Limits to the Quiet-Time
Solar Neutron Flux from 10 to 100
Mev.*
AD-A015 672

*NUCLEAR EXPLOSION SIMULATION
Experimental Studies of Soil
Thermal Irradiation. Volume III.
Design of Flux Diversion Equipment
for Soil Irradiation Testing.*
AD-A058 304

*NUCLEAR PHYSICS
POWER SUPPLIES
Translation of Russian newspaper
article: progress towards the
control of nuclear reactions.
AD- 614 023

*OPTICAL EQUIPMENT
OPTIC IN INSTALLATIONS FOR THE
UTILIZATION OF SOLAR ENERGY*
AD- 255 609

*OPTICAL PUMPING
Satellite Mounted Tracking
Optics to Continuously Pump Sun-
Pumped Laser.*
AD-A000 040

*OPTICAL TRACKING
Satellite Mounted Tracking
Optics to Continuously Pump Sun-
Pumped Laser.*
AD-A000 040

*ORGANIC COMPOUNDS
Energy Storing Organic
Photoreactions.*
AD-A074 915

*OXYGEN
UPPER ATMOSPHERE
Solar Photoabsorption and
Thermal Processes in the Polar
Thermosphere.*
AD- 735 305

*PERFORMANCE(ENGINEERING)
The Performance of an
Experimental Solar Heating System.*
AD-A066 699

*PHOTOCHEMICAL REACTIONS
Photon Energy Storage in Organic
Materials: The Case of Linked
Anthracenes.*
AD-A039 702
Photoisomerization of Bis(9-
Anthryl)Methane and other Linked
Anthracenes. The Role of Excimers
and Biradicals in
Photodimerization.*
AD-A051 336

Reprint: Electrode Materials for
the Photoelectrolysis of Water.
AD-1069 424
Energy Storing Organic
Photoreactions.*
AD-A074 915
Photosensitization Mechanisms
for Energy Storing Isomerizations.*
AD-A074 968

*PHOTOELECTRIC CELLS (SEMICONDUCTOR)
CADMIUM SULFIDE SOLAR GENERATOR*
AD- 053 603
ENERGY CONVERSION SYSTEMS
REFERENCE HANDBOOK. VOLUME V.
DIRECT SOLAR CONVERSION*
AD- 257 788

INVESTIGATION OF SOLAR
CONCENTRATING PHOTOVOLTAIC POWER
GENERATORS.
AD- 264 989
SOLAR ELECTRIC POWER STATIONS*
AD- 299 207

MATERIALS
Theoretical and experimental
study of components for a portable
thermophotovoltaic energy
converter.
AD- 431 557

*PHOTOELECTRIC CELLS(SEMICONDUCTOR)
Performance of Photovoltaic
Cells in an Undersea Environment.*
AD-A066 385

MANUFACTURING
Research in Solar Energy
Conversion.*
AD- 726 114

PHOTOCONDUCTIVITY
Semiconductor Solar Energy
Converters and the Phenomenon of
Photo Conductivity Quenching--
Translation.
AD- 743 031

SOLAR CELLS
Semiconductor Photoconverters--
Translation.
AD- 753 063

*PHOTOELECTRIC EFFECT
ENERGY CONVERSION SYSTEMS
REFERENCE HANDBOOK. VOLUME V.
DIRECT SOLAR CONVERSION*
AD- 257 788

*PHOTOELECTRIC MATERIALS
THERMOELECTRICITY
Theoretical and experimental
study of components for a portable
thermophotovoltaic energy
converter.
AD- 431 557

*PHOTOLYSIS

SUBJECT INDEX-9
UNCLASSIFIED ZOM09

NAV-PHO

UNCLASSIFIED

EFFICIENCY
CHEMICAL PHOTOGENERATIVE SOLAR
CONVERTER EFFICIENCY.*
AD- 681 757

*PHOTOSENSITIVITY
Photosensitization Mechanisms
for Energy Storing Isomerizations.*
AD-A074 968

*PHOTOTHERMAL ENERGY
Reprint: Application of
Granular Semiconductors to
Photothermal Conversion of Solar
Energy.
AD-A027 547

*PHOTOTUBES
ENERGY CONVERSION SYSTEMS
REFERENCE HANDBOOK. VOLUME V.
DIRECT SOLAR CONVERSION*
AD- 257 788
INVESTIGATION OF SOLAR
CONCENTRATING PHOTOVOLTAIC POWER
GENERATORS*
AD- 264 989

*PHOTOVOLTAIC EFFECT
Large Polarization Dependent
Voltages in Ferroelectric
Ceramics.*
AD- 785 608
Work in UK on the Applications
of Solar Cells in Space.*
AD-A011 084
Navy Applications for
Terrestrial Photovoltaic Solar
Power.*
AD-A030 529
Nonreflecting Vertical Junction
Silicon Solar Cell Optimization.*
AD-A064 431
Coast Guard Marine Exposure
Facilities for Naturally Aging
Solar Photovoltaic Modules.*
AD-A067 891

*PLANTS(BOTANY)
Feasibility of Meeting the
Energy Needs of Army Bases with
Self-Generated Fuels Derived from

Solar Energy Plantations.*
AD-A031 163
Feasibility of Meeting the
Energy Needs of Army Bases with
Self-Generated Fuels Derived from
Solar Energy Plantations
(Appendices A, B, and C).
AD-A031 164

*PLASTICS
LIGHT TRANSMISSION
Study of Phototechnical
Characteristics of Polymer Films
Used as Transparent Coatings in
Solar Water Heaters--Translation.
AD- 742 111

*POLAR REGIONS
UNFUELED POWER SUPPLY FOR
ISOLATED BASES ON SEA ICE*
AD- 263 905
Satellite Observations of Polar,
Magnetotail Lobe, and
Interplanetary Electrons at Low
Energies.*
AD-A050 640

*POSITIONING DEVICES(MACHINERY)
Solar-Powered Sun Tracker.*
AD-A078 653

*POWER
SOLAR CELLS
SOLAR CELL POWER SYSTEMS FOR AIR
FORCE SATELLITES.*
AD- 654 285

*POWER EQUIPMENT
MANNED SPACECRAFT
AN EVALUATION AND COMPARISON OF
POWER SYSTEMS FOR LONG-DURATION,
MANNED SPACE VEHICLES.*
AD- 820 856

*POWER SUPPLIES
CADMIUM SULFIDE SOLAR GENERATOR*
AD- 099 917
ENERGY CONVERSION SYSTEMS
REFERENCE HANDBOOK. VOLUME II.
SOLAR-THERMAL ENERGY SOURCES-
AD- 256 973

RESEARCH DETECTED TOWARD THE
IMPROVEMENT OF THE EFFICIENCY OF
SILICON BATTERIES BY UTILIZATION OF
UNABSORBED PHOTONS*
AD- 257 495

ENERGY CONVERSION SYSTEMS
REFERENCE HANDBOOK. VOLUME V.
DIRECT SOLAR CONVERSION*
AD- 257 788

UNFUELED POWER SUPPLY FOR
ISOLATED BASES ON SEA ICE*
AD- 263 905
FLAT-PLATE SOLAR THERMOELECTRIC
CONVERSION PANELS.*
AD- 282 213

ENERGY CONVERSION RESEARCH
PROGRAM. DIRECT CONVERSION OF
CHEMICAL ENERGY TO ELECTRICAL
ENERGY. PROTOTYPE FUEL CELLS
EMPLOYING CL AS OXIDANT, PCL3 AS
FUEL AND CH3CN AS THE SOLVENT
WERE INVESTIGATED.
PYROLYTIC PROCESSES FOR
REGENERATION OF REACTION PRODUCTS
WERE STUDIED.
AD- 285 084

METHODS OF CONVERTING VARIOUS
FORMS OF ENERGY, INCLUDING SOLAR
ENERGY, INTO ELECTRICAL ENERGY.
AD- 286 578

RESEARCH IN PHOTOEMISSIVE ENERGY
CONVERSION.
AD- 294 000
Solar Collector Thermal Power
System. Volume I. Preliminary
Technology Systems Study.*
AD-A000 940

Solar Collector Thermal Power
System. Volume II. Development,
Fabrication, and Testing of Fifteen
Foot Heat Pipes.*
AD-A000 941

A Solar Power Radiometer.*
AD-A039 995
Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems Program
Documentation. Volume II - User's
Manual.*
AD-A047 356
Computer Program for Design and

SUBJECT INDEX-10
UNCLASSIFIED ZOM09

PHO-POW

[illegible][illegible][illegible]

1-1-7304

2025-01-28

UNCLASSIFIED

Very Large Area, (V.L.A.)
Observations of Solar Active
Regions.*
AD-A066 780

•RADIO INTERFEROMETRY
Very Large Array (V.L.A.)
Observations of Solar Active
Regions.*
AD-A066 780

•REFLECTORS
INVESTIGATION OF SOLAR
CONCENTRATING PHOTOVOLTAIC POWER
GENERATORS.*
AD- 264 989

POWER SUPPLIES
Program RCE(Reflector orbital
experiment). Part 5 investigation
of test programs for solar
collector materials.
AD- 813 123

•RENDEZVOUS SPACECRAFT
TRANSMISSION LINES
SPACE LINKAGE SYSTEM.
ANALYTICAL STUDY AND PRELIMINARY
DESIGN. VOLUME I.*
AD- 816 039

•RESEARCH MANAGEMENT
Technology Transfer in Science,
Technology and Public Policy.*
AD-A073 190

•RETROFITTING
Solar Heating Retrofit of
Military Family Housing.*
AD-A030 843

•SANDWICH PANELS
FLAT-PLATE SOLAR THERMOELECTRIC
CONVERSION PANELS.*
AD- 282 213

•SATELLITES(ARTIFICIAL)
POWER SUPPLIES
SPACE POWER SUPPLY STUDY.*
AD- 672 772

SOLAR CELLS
SOLAR CELL POWER SYSTEMS FOR APL
SATELLITES.*
AD- 668 144

SOLAR PANELS
SOLAR CELL POWER SYSTEMS FOR AIR
FORCE SATELLITES.*
AD- 654 265

•SATURABLE REACTORS
DEVELOPMENT OF A PHOTOEMISSIVE
SOLAR ENERGY CONVERTER.
AD- 288 650

•SCIENTIFIC SATELLITES
ELECTRIC POWER PRODUCTION
DODGE SATELLITE POWER SYSTEM.*
AD- 669 994

REFRIGERATION SYSTEMS
Solar Heat Source Feasibility
Study.*
AD- 879 939

•SEA WATER
A Preliminary Design, Economic
and Energy Analysis, and
Environmental Impact Assessment for
a Seawater Cooling Project Naval
Security Group Facilities at Winter
Harbor, Maine.*
AD-A056 403

•SEMICONDUCTOR DIODES
Nonreflecting Vertical Junction
Solar Cell Optimization.*
AD-A046 150

Nonreflecting Vertical Junction
Solar Cell Optimization.*
AD-A064 431

•SEMICONDUCTORS
Reprints: Properties of Sn-Doped
In2O3 Films prepared by RF
Sputtering.
AD-A024 234

Reprints: Application of
Granular Semiconductors to
Photothermal Conversion of Solar
Energy.

AD-A027 547
Coast Guard Marine Exposure
Facilities for Naturally Aging
Solar Photovoltaic Modules.*
AD-A067 891

PHOTOCONDUCTIVITY
Semiconductor Solar Energy
Converters and the Phenomenon of
Photo Conductivity Quenching--
Translation.
AD- 743 031

•SILICON
RESEARCH DETECTED TOWARD THE
IMPROVEMENT OF THE EFFICIENCY OF
SILICON BATTERIES BY UTILIZATION OF
UNABSORBED PHOTONS.*
AD- 257 495

High Efficiency Solar Panel
(HESP).*

AD-A043 382

Low Temperature Fabrication of
High Efficiency Silicon Solar
Cells.*

AD-A061 956

Low Resistivity-High Minority
Carrier Lifetime Single Crystal
Silicon Investigation.*
AD-A077 684

•SILVER
Reprints: Transparent Heat-
Winder Films of TiO2/Ag/TiO2 for
Solar Energy Collection and
Radiation Insulation.
AD-A007 892

•SINGLE CRYSTALS
Low Resistivity-High Minority
Carrier Lifetime Single Crystal
Silicon Investigation.*
AD-A077 684

•SOLAR ACTIVITY
An Observational Search for
Large-Scale Organization of Five-
Minute Oscillations on the Sun.*
AD-A047 842

Very Large Array (V.L.A.)
Observations of Solar Active

SUBJECT INDEX-12
UNCLASSIFIED ZW003

RAD-SOL

UNCLASSIFIED

Regions.*
AD-A066 780

*SOLAR CELLS
CALCIUM SULFIDE SOLAR GENERATOR*
AD- 066 783
AD- 255 389
RESEARCH DETECTED TOWARD THE
IMPROVEMENT OF THE EFFICIENCY OF
SILICON BATTERIES BY UTILIZATION OF
UNABSORBED PHOTONS.
AD- 257 495
ENERGY CONVERSION SYSTEMS
REFERENCE HANDBOOK. VOLUME V.
DIRECT SOLAR CONVERSION*
AD- 257 788
PHOTOEMISSION SOLAR ENERGY
CONVERTER*
AD- 264 828
INVESTIGATION OF SOLAR
CONCENTRATING PHOTOVOLTAIC POWER
GENERATORS*
AD- 264 989
DESIGN STUDY FOR ADVANCED SOLAR
THERMIONIC POWER SYSTEMS. ITEM II.
PART I. VAPOR TYPE THERMIONIC
GENERATOR*
AD- 267 330
A MOTOR CONNECTED TO THE SUN*
AD- 271 829
SOLAR ORIENTING DEVICE FOR
EXPANDABLE FLAT-PANEL ARRAY*
AD- 273 551
TEMPERATURE CONTROL TECHNIQUE
FOR SOLAR ENERGY CONVERTERS*
AD- 274 922
ENERGY CONVERSION RESEARCH
PROGRAM. DIRECT CONVERSION OF
CHEMICAL ENERGY TO ELECTRICAL
ENERGY. PROTOTYPE FUEL CELLS
EMPLOYING CL AS OXIDANT, PCL3 AS
FUEL AND CH3SO3N AS THE SOLVENT
WERE INVESTIGATED.
ELECTROLYTIC PROCESSES FOR
REGENERATION OF REACTION PRODUCTS
WERE STUDIED.
AD- 285 084
METHODS OF CONVERTING VARIOUS
FORMS OF ENERGY, INCLUDING SOLAR
ENERGY, INTO ELECTRICAL ENERGY.

AD- 286 578
SOLAR ELECTRIC POWER STATIONS.
AD- 299 207
Study of Solar-Energy Use in
Marine Navigation Aids.*
AD- 786 935
Work in UK on the Applications
of Solar Cells in Space.*
AD-A011 084
Development of Vertical
Multijunction Solar Cells for
Spacecraft Primary Power. Volume
II.*
AD-A025 719
Low Reflectivity Solar Cells.*
AD-A025 522
Navy Applications for
Terrestrial Photovoltaic Solar
Power.*
AD-A030 529
A Solar Power Radiometer.*
AD-A039 995
High Efficiency Solar Panel
(HESP).
AD-A043 382
Nonreflecting Vertical Junction
Silicon Solar Cell Optimization.*
AD-A046 150
Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems Program
Documentation. Volume II - User's
Manual.*
AD-A047 356
Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems Program
Documentation. Volume III -
Programmer's Manual.*
AD-A047 542
Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems. Program
Documentation, Volume I. Software
Requirements Document.*
AD-A047 925
GaAs Concentrator Photovoltaic
Power System Feasibility
Investigation.*
AD-A051 851
Solar Cell Power for Field

Instrumentation at White Sands
Missile Range.*
AD-A053 960
Reprint: Simplified Fabrication
of GaAs Homojunction Solar Cells
with Increased Conversion
Efficiencies.
AD-A058 281
Low Temperature Fabrication of
High Efficiency Silicon Solar
Cells.*
AD-A061 956
Nonreflecting Vertical Junction
Silicon Solar Cell Optimization.*
AD-A064 431
High Efficiency Solar Panel
(HESP-II).
AD-A065 009
Performance of Photovoltaic
Cells in an Undersea Environment.*
AD-A066 385
High Efficiency GaAs Solar Cell
Development.*
AD-A066 616
Coast Guard Marine Exposure
Facilities for Naturally Aging
Solar Photovoltaic Modules.*
AD-A067 891
Economic Analysis of Solar
Photovoltaics for Low-Power Lighted
Aids to Navigation.*
AD-A068 365
Reprint: Solar Cells: Plugging
into the Sun.
AD-A069 319
Evaluation of Solar Photovoltaic
Arrays for Use on Marine Aids to
Navigation.*
AD-A074 893
Low Resistivity-High Minority
Carrier Lifetime Single Crystal
Silicon Investigation.*
AD-A077 684
Survivability of Remote Site
Alternate Energy Systems. Volume I.
Survivability Analysis.*
AD-A078 118

COSTS
Calculation and Cost
Optimization of Certain Solar

SUBJECT INDEX-13
UNCLASSIFIED Z0W09

SOL-SOL

UNCLASSIFIED

Generator Thermobattery Parameters--
Translation.
AD- 759 812

DESIGN
A Study of 'Photovolt' Generator
at High Radiation Intensity--
Translation.
AD- 745 364

ELECTRICAL PROP
Development of high efficiency
silicon solar cells for terrestrial
applications.
AD- 409 001

ENERGY CONVERSION
Photovoltaic power systems using
high solar energy fluxes.
AD- 629 241
Semiconductor Solar Energy
Converters and the Phenomenon of
Photo Conductivity Quenching--
Translation.
AD- 743 031

FILMS
PHOTOVOLTAIC AND THERMOELECTRIC
SOLAR ENERGY CONVERSION USING THIN
FILMS.*
AD- 686 496

ION ENGINES
FEASIBILITY STUDY OF AN ION-
PROPELLED MARS ORBITER/LANDER
SPACECRAFT WITH SOLAR PHOTOVOLTAIC
POWER. VOLUME I. SUMMARY.*
AD- 804 109

PHOTOELECTRIC CELLS(SEMICONDUCTOR)
Semiconductor Photoconverters--
Translation.
AD- 753 063

POWER
SOLAR CELL POWER SYSTEMS FOR AIR
FORCE SATELLITES.*
AD- 654 285

POWER SUPPLIES
Solar Battery-Photovoltaic Cell

Power Supply for Equipment--
Translation.
AD- 748 694

RELIABILITY(ELECTRONICS)
Research in Solar Energy
Conversion.*
AD- 726 114

SATELLITES(ARTIFICIAL)
SOLAR CELL POWER SYSTEMS FOR APL
SATELLITES.*
AD- 668 144

SINGLE CRYSTALS
Research in energy conversion:
Photovoltaic, thermoelectric,
thermionic, and photochemical
phenomena.
AD- 429 505

SPACECRAFT COMPONENTS
Space Electric Power Plants.
Part I--Translation.
AD- 741 524

STORAGE BATTERIES
DODGE SATELLITE POWER SYSTEM.*
AD- 669 994

SYMPOSIA
POWER SOURCES CONFERENCE (16th
ANNUAL), HELD 22-24 MAY 1962.
PROCEEDINGS.*
AD- 696 421
POWER SOURCES CONFERENCE (17th
ANNUAL), HELD 21-23 MAY 1963.
PROCEEDINGS.*
AD- 696 422
POWER SOURCES CONFERENCE (18th
ANNUAL), HELD 19-21 MAY 1964.
PROCEEDINGS.*
AD- 696 423
POWER SOURCES CONFERENCE (19th
ANNUAL), HELD 18-20 MAY 1965.
PROCEEDINGS.*
AD- 696 424
POWER SOURCES CONFERENCE (20th
ANNUAL), HELD 24-25-26 MAY 1966.
PROCEEDINGS.*
AD- 696 425

*SOLAR COLLECTORS
Solar Collector Thermal Power
System. Volume I. Preliminary
Technology Systems Study.*
AD-A000 940
Solar Collector Thermal Power
System. Volume II. Development,
Fabrication, and Testing of Fifteen
Foot Heat Pipes.*
AD-A000 941
Solar Heating and Cooling of
Buildings Study Conducted for
Department of the Army. Volume II.
Technical Report.*
AD-A002 563
Reprint: Properties of Sn-Doped
In2O3 Films prepared by RF
Sputtering.
AD-A024 234
Solar Heating Feasibility
Study.*
AD-A025 465
Reprint: Transparent Heat
Mirrors for Solar-Energy
Applications.
AD-A027 105
Reprint: Thin-Film Conducting
Microgrids as Transparent Heat
Mirrors.
AD-A027 110
Feasibility of Heating Domestic
Hot water for Apartments with Solar
Energy.*
AD-A028 418
Predicting the Performance of
Solar Energy Systems.*
AD-A035 608
Market Evaluation Study: Solar
Domestic Water Heaters for DOD
barracks.*
AD-A036 479
Solar Electric Generating System
Resource Requirements and the
Feasibility of Orbiting Solar
Reflectors.*
AD-A045 908
High-Temperature Linear
Radiation-Cavity Solar Collector
with a Fresnel Concentrator.*
AD-A049 982

SUBJECT INDEX-14
UNCLASSIFIED ZOMQ9

SOL-SOL

UNCLASSIFIED

EFFICIENCY

Matching a thermionic converter with a solar cell in a solar power array--Translation.
AD- 704 002

ELECTRIC POWER PRODUCTION

Program ROE(Reflector orbital experiment). Part 5 investigation of test programs for solar collector materials.
AD- 813 123

FEASIBILITY STUDIES

Solar Heat Source Feasibility Study.*
AD- 879 939

FILMS

Film Solar Energy Collector with Concentric Circular Seams--Translation.
AD- 755 829

USSR

Review of Russian research on solar concentrators.
AD- 653 184

*SOLAR CORONA

Prediction of Solar Energetic Particle Event Histories Using Real-Time Particle and Solar Wind Measurements.*
AD-A028 057

An Observational Search for Large Scale Organization of Five-Minute Oscillations on the Sun.*
AD-A047 842

Very Large Array (V.L.A.) Observations of Solar Active Regions.*
AD-A066 780

*SOLAR COSMIC RAYS

Reprint: Interplanetary Particle Fluxes Observed by Ovs-6 Satellite.
AD- 784 520

*SOLAR ENERGY

Preliminary Reports, Memoranda and Technical Notes of the Materials Research Council Summer Conference Held at La Jolla, California, July, 1973. Volume II. Proceedings of the Discussion Group on Solar Energy Conversion.*
AD- 777 737

Solar Energy.*
AD- 778 846
Development of Solar Engineering in the USSR--Translation.
AD- 784 708

Research and Development Project for New Energy Technology (Sunshine Plan)--Translation.
AD-A014 534

Influence of the Solar Electron Energy Distribution on the Microwave Spectrum of Gyro-Synchrotron Radiation.*
AD-A022 977

Reprint: Properties of Sn-Doped In2O3 Films prepared by RF Sputtering.
AD-A024 234

Solar Heating Feasibility Study.*
AD-A025 465

Method for Estimating Solar Heating and Cooling System Performance.*
AD-A026 041

Interim Feasibility Assessment Method for Solar Heating and Cooling of Army Buildings.*
AD-A026 588

Reprint: Transparent Heat Mirrors for Solar-Energy Applications.
AD-A027 105

Reprint: Thin-Film Conducting Microgrids as Transparent Heat Mirrors.
AD-A027 110

Reprint: Application of Granular Semiconductors to Photothermal Conversion of Solar Energy.
AD-A027 547

Solar Energy Storage.*

SUBJECT INDEX-15
UNCLASSIFIED ZOW09

AD-A028 083
Navy Applications for Terrestrial Photovoltaic Solar Power.*

AD-A030 529
Solar Heating Retrofit of Military Family Housing.*
AD-A030 843
Feasibility of Meeting the Energy Needs of Army Bases with Self-Generated Fuels Derived from Solar Energy Plantations.*
AD-A031 163

Feasibility of Meeting the Energy Needs of Army Bases with Self-Generated Fuels Derived from Solar Energy Plantations (Appendices A, B, and C).*
AD-A031 164

Predicting the Performance of Solar Energy Systems.*
AD-A035 608

Solar Energy.*

AD-A038 600
Photon Energy Storage in Organic Materials: The Case of Linked Anthracenes.*

AD-A039 702
Efficiencies of Various Methods for Solar Energy Conversion.*
AD-A042 584

Solar Air - Conditioning Study.*
AD-A043 951

Net Energy Analysis Model for the Evaluation of a Solar Heating, Ventilation and Air Conditioning System.*
AD-A047 433

Solar Electric Generating System Resource Requirements and the Feasibility of Orbiting Solar Reflectors.*
AD-A048 908

Solar Energy for the Naval Shore Establishment.*
AD-A050 026

Preliminary Design of a 10 kWe Solar Heated Open Brayton-Cycle Engine. Phase I.*
AD-A051 101

SOL-SOL

UNCLASSIFIED

GaAs Concentrator Photovoltaic Power System Feasibility Investigation.*
AD-A051 851
A Comparison of the Actual and Predicted Performance of a Solar Assisted Space Heating System.*
AD-A056 452
Solar Assisted Heat Pump Study for Heating of Military Facilities.*
AD-A058 626
Satellite Solar Station-- Translation.
AD-A061 961
Design of Solar Heating and Cooling Systems.*
AD-A062 719
Solar Energy Design Improvement: A Methodology for Hydronic Flat Plate Collector Systems.*
AD-A076 836
Reprint: The Step Excitation Method for Studying Reversible Excited-State Electron-Transfer Reactions: Experimental Realization.
AD-A078 144
Solar-Powered Sun Tracker.*
AD-A078 653

*SOLAR FLARES
Solar Electron Access to the Magnetosphere.*
AD- 770 319
Reprint: Interpretation of Flare-Produced Proton Spectra.
AD-A020 776
Reprint: Production of Flare-Produced H₂ and He³.
AD-A025 033
Reprint: High Resolution Observations of Flare Changes in a Small Flare.
AD-A072 212
Is the Galactic Corona Produced by Galactic Flares.*
AD-A076 612

CHARGED PARTICLES
Reprint: Characteristics of Electron and High-Energy Proton Flares.
AD- 762 848

ELECTRONS
Direct Observations of Low-Energy Solar Electrons Associated with a Type III Solar Radio Burst.*
AD- 738 925

MATHEMATICAL MODELS
A Model for U-Shaped Solar Burst Spectra.*
AD- 747 033

SOLAR RADIATION
Relativistic Electron Events in Interplanetary Space.*
AD- 763 756

*SOLAR FURNACES
Summary of Parabolic Solar Furnace Performance Design.*
AD-A001 063
Notes on Optical Design Principles, Concentration Ratios, and Maximum Temperatures of Parabolic Solar Furnaces.*
AD-A001 066
Experimental Studies of Soil Thermal Irradiation. Volume III. Design of Flux Diversion Equipment for Soil Irradiation Testing.*
AD-A058 304

BOILERS
DETERMINATION OF CAUSE OF PRESSURE SURGE ASSOCIATED WITH LITHIUM-FLUORIDE STEAM HEAT RECEIVER.*
AD- 839 951

CRYSTAL GROWTH
Reprint: Thoria single crystals grown by vapor deposition in a solar furnace.
AD- 652 752

HIGH TEMPERATURE
Installation for high-temperature investigations of heat-

resistant aviation materials and coatings-- Translation.
AD- 692 635
High-temperature solar furnace-- Translation.
AD- 704 754

SITE SELECTION
EXPLORATORY STUDY TO DETERMINE FAVORABLE LOCATIONS IN THE UNITED STATES FOR CONSTRUCTION OF A SOLAR FURNACE.*
AD- 699 358

SPACE STATIONS
Reprint: Industrial Chemistry in Space.
AD- 720 136

*SOLAR GENERATORS
The Heliodevice (Geliostanovka)-- Translation.
AD- 772 451
Electric Circuit Calculations for Multistage Solar Thermoelectric Generators-- Translation.
AD- 782 041
Hoffman HSP-1 Solar Converter.*
AD- 786 384
Proposal Evaluation - Ocean Thermal Gradients and Solar Ponds.*
AD-A022 080
Environmental Factors of Power Satellites.*
AD-A072 308

*SOLAR HEATING
Wind and Solar Power Engineering-- Translation.
AD- 786 844
Solar Heating and Cooling of Buildings Study Conducted for Department of the Army. Volume II. Technical Report.*
AD-A002 563
Solar Heating and Cooling of Buildings Study Conducted for Department of the Army. Volume I: Executive Summary and Implementation Plans.*
AD-A002 576

SUBJECT INDEX-16
UNCLASSIFIED
ZOM09

SOL-SOL

UNCLASSIFIED

Solar Heating Feasibility Study.*
AD-A025 465
Method for Estimating Solar Heating and Cooling System Performance.*
AD-A026 041
Interim Feasibility Assessment Method for Solar Heating and Cooling of Army Buildings.*
AD-A026 588
Reprint: Transparent Heat Mirrors for Solar-Energy Applications.
AD-A027 105
Reprint: Thin-Film Conducting Microgrids as Transparent Heat Mirrors.
AD-A027 110
Analysis of the Technical and Cost Feasibility of Solar and/or Wind Energy Systems for Coast Guard Public Quarters.*
AD-A028 332
Feasibility of Heating Domestic Hot Water for Apartments with Solar Energy.*
AD-A028 418
Solar Heating Retrofit of Military Family Housing.*
AD-A030 843
Market Evaluation Study: Solar Domestic Water Heaters for DOD Barracks.*
AD-A036 479
Market Evaluation Study: Solar Heating and Domestic Hot Water Heating in DOD Buildings.*
AD-A042 178
Second Interim Technical Report on USAFA Solar Test House.*
AD-A045 042
An Attitudinal Study of the Home Market for Solar Devices.*
AD-A045 082
Net Energy Analysis Model for the Evaluation of a Solar Heating, Ventilation and Air Conditioning System.*
AD-A047 433
A Survey of Considerations for Solar Energy Facility Applications.*
AD-A049 490
Solar Heating of Buildings and Domestic Hot Water.*
AD-A054 601
A Comparison of the Actual and Predicted Performance of a Solar Assisted Space Heating System.*
AD-A056 452
Third Interim Technical Report on USAFA Solar Test House Design Parameters.*
AD-A060 458
Design of Solar Heating and Cooling Systems.*
AD-A062 719
The Possibilities of Selective Glass -- Translation.
AD-A065 845
The Performance of an Experimental Solar Heating System.*
AD-A066 699
*SOLAR PANELS
AD-A039 995
A Solar Power Radiometer.*
AD-A039 995
Second Interim Technical Report on USAFA Solar Test House.*
AD-A045 042
High Efficiency Solar Panel (HES-II).
AD-A065 009
SATELLITES(ARTIFICIAL)
SOLAR CELL POWER SYSTEMS FOR AIR FORCE SATELLITES.*
AD- 654 285
SPACECRAFT COMPONENTS
Space Electric Power Plants. Part 2--Translation.
AD- 756 039
THERMOELECTRIC
Solar flat plate thermoelectric generator research.
AD- 418 322
*SOLAR RADIATION
CADMIUM SULFIDE SOLAR GENERATOR*

Solar Energy Facility Applications.*
AD-A049 490
Solar Heating of Buildings and Domestic Hot Water.*
AD-A054 601
A Comparison of the Actual and Predicted Performance of a Solar Assisted Space Heating System.*
AD-A056 452
Third Interim Technical Report on USAFA Solar Test House Design Parameters.*
AD-A060 458
Design of Solar Heating and Cooling Systems.*
AD-A062 719
The Possibilities of Selective Glass -- Translation.
AD-A065 845
The Performance of an Experimental Solar Heating System.*
AD-A066 699
*SOLAR PANELS
AD-A039 995
A Solar Power Radiometer.*
AD-A039 995
Second Interim Technical Report on USAFA Solar Test House.*
AD-A045 042
High Efficiency Solar Panel (HES-II).
AD-A065 009
SATELLITES(ARTIFICIAL)
SOLAR CELL POWER SYSTEMS FOR AIR FORCE SATELLITES.*
AD- 654 285
SPACECRAFT COMPONENTS
Space Electric Power Plants. Part 2--Translation.
AD- 756 039
THERMOELECTRIC
Solar flat plate thermoelectric generator research.
AD- 418 322
*SOLAR RADIATION
CADMIUM SULFIDE SOLAR GENERATOR*

AD- 069 093
A CADMIUM SULFIDE SOLAR ENERGY GENERATOR*
AD- 101 783
A SPLINTER OF THE SUN*
AD- 255 389
OPTIC IN INSTALLATIONS FOR THE UTILIZATION OF SOLAR ENERGY*
AD- 255 609
ENERGY CONVERSION SYSTEMS
SOLAR-THERMAL ENERGY SOURCES*
AD- 256 973
ENERGY CONVERSION SYSTEMS
REFERENCE HANDBOOK. VOLUME V. DIRECT SOLAR CONVERSION*
AD- 257 788
TEMPERATURE CONTROL TECHNIQUE FOR SOLAR ENERGY CONVERTERS*
AD- 274 922
METHODS OF CONVERTING VARIOUS FORMS OF ENERGY, INCLUDING SOLAR ENERGY, INTO ELECTRICAL ENERGY.
AD- 286 578
DEVELOPMENT OF A PHOTOEMISSIVE SOLAR ENERGY CONVERTER.
AD- 288 650
Solar Electron Access to the Magnetosphere.*
AD- 770 319
Parameterization of Solar Absorptivity and Transmissivity Using NIMBUS II Reflectance Data.*
AD-A001 253
Upper Limits to the Quiet-Time Solar Neutron Flux from 10 to 100 MeV.*
AD-A015 672
Reprint: Transparent Heat Mirrors for Solar-Energy Applications.
AD-A027 105
Reprint: Thin-Film Conducting Microgrids as Transparent Heat Mirrors.
AD-A027 110
Investigation of the Interrelationship between Direct, Diffuse, and Total Solar Radiation.*
AD-A072 986

SUBJECT INDEX-17
UNCLASSIFIED ZON09

SOL-SOL

UNCLASSIFIED

ENERGY CONVERSION
Theoretical and experimental study of components for a portable thermophotovoltaic energy converter.
AD- 431 557

CHEMICAL PHOTOREGENERATIVE SOLAR CONVERTER EFFICIENCY.*
AD- 681 757

EXTRATERRESTRIAL RADIO WAVES
Direct Observations of Low-Energy Solar Electrons Associated with a Type III Solar Radio Burst.*
AD- 738 925

GENERATORS
Feasibility study of solar thermoelectric generators for space vehicles.
AD- 415 024

INTEGRAL EQUATIONS
LOCAL RADIATION EQUILIBRIUM TEMPERATURES IN SEMIGRAY ENCLOSURES.*
AD- 648 011

INTENSITY
Development of high efficiency silicon solar cells for terrestrial applications.
AD- 409 001

MAGNETOSPHERE
PROPAGATION OF SOLAR PARTICLES TO THE POLAR CAPS.*
AD- 701 739

POLAR REGIONS
Rapid Access of Solar Electrons to the Polar Caps.*
AD- 736 430

SOLAR FLARES
Relativistic Electron Events in Interplanetary Space.*
AD- 763 756

*SOLAR SATELLITES
Satellite Solar Station--

Translation.
AD-A061 961
Environmental Factors of Power Satellites.*
AD-A072 308

*SOLAR SPECTRUM
Reprint: Interpretation of Flare-Produced Proton Spectra.
AD-A020 776

*SOLAR WIND
Prediction of Solar Energetic Particle Event Histories Using Real-Time Particle and Solar Wind Measurements.*
AD-A028 057
High Resolution Spectrograms of Ion-Acoustic Waves in the Solar Wind.*
AD-A054 912
Digest of Equipment for Converting Solar, Wind, and Geothermal Energy into Electric Power for USN Application Ashore.*
AD-A066 221

*SPACE COMMUNICATIONS
Reprint: Solar-Powered Laser Communications System for Space.
AD-A046 763

*SPACE ENVIRONMENTS
ELECTRONS
Relativistic Electron Events in Interplanetary Space.*
AD- 763 756

MAGNETIC FIELDS
Experimental Evidence for the Connection between the Geomagnetic and the Interplanetary Fields as Determined from Observations of Energetic Solar Particles.*
AD- 763 715

*SPACE PROPULSION
ION ENGINES
FEASIBILITY STUDY OF AN ION-PROPELLED MAPS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC

POWER. VOLUME II. MISSION ANALYSIS.*
AD- 804 110

SYMPOSIA
SPACE POWER SYSTEMS. PART I.*
AD- 698 652
SPACE POWER SYSTEMS. PART II.*
AD- 698 653

*SPACE STATIONS
CHEMICAL ENGINEERING
Reprint: Industrial Chemistry in Space.
AD- 720 136

*SPACE TO SURFACE
Solar Electric Generating System Resource Requirements and the Feasibility of Orbiting Solar Reflectors.*
AD-A048 908

*SPACECRAFT
POWER SUPPLIES
SPACE ELECTRICAL POWER SYSTEMS FOR THE MID-1970'S.*
AD- 701 352

THERMAL PROPERTIES
LOCAL RADIATION EQUILIBRIUM TEMPERATURES IN SEMIGRAY ENCLOSURES.*
AD- 648 011

*SPACECRAFT COMPONENTS
Solar Collector Thermal Power System. Volume I. Preliminary Technology Systems Study.*
AD-A000 940
Solar Collector Thermal Power System. Volume II. Development, Fabrication, and Testing of Fifteen Foot Heat Pipes.*
AD-A000 941
High Efficiency Solar Panel (HESP-II).*
AD-A065 009

*STATE LAW
Is the Right to Light a

SUBJECT INDEX-18
UNCLASSIFIED
Z0Y03

SOL-STA

UNCLASSIFIED

- California Necessity,*
AD-A026 660
- *STORAGE BATTERIES
Analysis of Remote Site Energy
Storage and Generation Systems.*
AD-A026 660
- SOLAR CELLS
DODGE SATELLITE POWER SYSTEM.*
AD- 669 994
- SYMPOSIA
POWER SOURCES CONFERENCE (16th
ANNUAL), HELD 22-24 MAY 1962.
PROCEEDINGS.*
AD- 696 422
- POWER SOURCES CONFERENCE (17th
ANNUAL), HELD 21-23 MAY 1963.
PROCEEDINGS.*
AD- 696 422
- POWER SOURCES CONFERENCE (18th
ANNUAL), HELD 19-21 MAY 1964.
PROCEEDINGS.*
AD- 696 423
- POWER SOURCES CONFERENCE (19th
ANNUAL), HELD 18-20 MAY 1965.
PROCEEDINGS.*
AD- 696 424
- POWER SOURCES CONFERENCE (20th
ANNUAL), HELD 24-25-26 MAY 1966.
PROCEEDINGS.*
AD- 696 425
- *SUNLIGHT
Is the Right to Light a
California Necessity.*
AD-A026 660
- *SURVEYS
An Attitudinal Study of the Home
Market for Solar Devices.*
AD-A045 082
- *SURVIVAL(GENERAL)
Survivability of Remote Site
Alternate Energy Systems. Volume I.
Survivability Analysis.*
AD-A078 118
- *SWITCHING CIRCUITS
- Design of Flux Diversion Equipment
for Soil Irradiation Testing.*
AD-A058 304
- INTEGRAL EQUATIONS
LOCAL RADIATION EQUILIBRIUM
TEMPERATURES IN SEMIGRAY
ENCLOSURES.*
AD- 648 011
- *THERMAL STABILITY
BOILERS
DETERMINATION OF CAUSE OF
PRESSURE SURGE ASSOCIATED WITH
LITHIUM-FLUORIDE STEAM HEAT
RECEIVER.*
AD- 839 951
- *THERMIONIC CONVERTERS
DESIGN
Matching a thermionic converter
with a solar cell in a solar power
array--Translation.
AD- 704 002
- *THERMIONIC EMISSION
DESIGN STUDY FOR ADVANCED SOLAR
THERMIONIC POWER SYSTEMS. ITEM II.
PART I. VAPOR TYPE THERMIONIC
GENERATOR.*
AD- 267 330
- LONG-LIFE THERMIONIC CONVERTERS
FOR SOLAR POWER SYSTEMS.
EFFORTS ARE THE LIFE CYCLE OF
INCREASING THE LIFE CYCLE OF
SOLAR THERMIONIC GENERATORS.
SPECIALIZED EQUIPMENT, TECHNIQUES,
AND DESIGN DETAILS ARE PRESENTED.
AD- 299 004
- *THERMODYNAMICS
Thermodynamic Analysis and
Parameter Optimization of a Solar
Thermoelectric Power Unit with
Radiation Heat Dissipation--
Translation.
AD-A000 211
- Conference on Thermodynamics and
National Energy Problems Held at
Airlie House, Warrenton, Virginia
on Jun 10-12, 1974.*
- POWER SUPPLIES
Solar Battery-Photovoltaic Cell
Power Supply for Equipment--
Translation.
AD- 748 694
- *SYMPOSIA
POWER SUPPLIES
POWER SOURCES CONFERENCE (16th
ANNUAL), HELD 22-24 MAY 1962.
PROCEEDINGS.*
AD- 696 421
- POWER SOURCES CONFERENCE (17th
ANNUAL), HELD 21-23 MAY 1963.
PROCEEDINGS.*
AD- 696 422
- *SYNCHROTRONS
Influence of the Solar Electron
Energy Distribution on the
Microwave Spectrum of Gyro-
Synchrotron Radiation.*
AD-A022 977
- *SYNTHETIC FUELS
U.S. Navy Energy R and D
Progress October 1976-March 1977.*
AD-A039 546
- *TECHNOLOGY TRANSFER
Technology Transfer in Science,
Technology and Public Policy.*
AD-A073 190
- *TELEMETRY SYSTEMS
Solar Cell Power for Field
Instrumentation at White Sands
Missile Range.*
AD-A053 560
- *THERMAL INSULATION
EXPANDED PLASTICS
The Application of Phenol-
Formaldehyde Plastic Foam as
Thermal Insulation for Solar Water
Heaters--Translation.
AD- 755 591
- *THERMAL RADIATION
Experimental Studies of Soil
Thermal Irradiation. Volume III.

SUBJECT INDEX-19
UNCLASSIFIED ZOM09

STO-THE

UNCLASSIFIED

AD-A012 702

*THERMOELECTRIC POWER GENERATION
Electric Circuit Calculations
for Multistage Solar Thermoelectric
Generators--Translation.

AD- 782 041

Thermodynamic Analysis and
Parameter Optimization of a Solar
Thermoelectric Power Unit with
Radiation Heat Dissipation--
Translation.

AD-A000 211

*THERMOELECTRICITY
CADMIUM SULFIDE SOLAR GENERATOR*
AD- 053 603
FLAT-PLATE SOLAR THERMOELECTRIC
CONVERSION PANELS.*

AD- 282 213

Solar Collector Thermal Power
System. Volume I. Preliminary
Technology Systems Study.*
AD-A000 940

COSTS

Calculation and Cost
Optimization of Certain Solar
Generator Thermobattery Parameters--
Translation.

AD- 759 812

GENERATORS

Performance Reliability
Calculation for a Modular Solar
Thermoelectric Generator--
Translation.

AD- 757 087

SEMICONDUCTORS

Theoretical and experimental
study of components for a portable
thermophotovoltaic energy
converter.

AD- 431 557

SOLAR RADIATION

Feasibility study of solar
thermoelectric generators for space
vehicles.
AD- 415 024

*THIN FILMS

Reprint: Properties of Sn-Doped
In2O3 Films prepared by RF
Sputtering.
AD-A024 234

*THORIUM COMPOUNDS CRYSTAL GROWTH

Reprint: Thoria single crystals
grown by vapor deposition in a
solar furnace.
AD- 652 752

*TITANIUM OXIDES

Reprint: Transparent Heat-
Mirror Films of TiO2/Ag/TiO2 for
Solar Energy Collection and
Radiation Insulation.
AD-A007 892

*TRACKING

Solar-Powered Sun Tracker.*
AD-A078 653

*TRANSMISSION LINES

RENDEZVOUS SPACECRAFT
SPACE LINKAGE SYSTEM.
ANALYTICAL STUDY AND PRELIMINARY
DESIGN. VOLUME I.*
AD- 816 039

SPACE LINKAGE SYSTEM.

ANALYTICAL STUDY AND PRELIMINARY
DESIGN. VOLUME II. APPENDIXES.*
AD- 816 040

*UPPER ATMOSPHERE

HEATING
Annual and Sub-Annual Effects of
EUV (Extreme Ultraviolet) Heating.
Volume I. Harmonic Analysis.*
AD- 745 305

Annual and Sub-Annual Effects of
EUV (Extreme Ultraviolet) Heating.
Volume II. Comparison with Density
Observations.*
AD- 745 309

PLASMAS(PHYSICS)

The Aerospace Corporation Space
Science Program Report to COSPAR CY
1971.*

AD- 746 326

SOLAR RADIATION

Solar Photoabsorption and
Thermal Processes in the Polar
Thermosphere.*
AD- 735 305

*VOLTAGE REGULATORS

The Application of DC-DC Energy
Conversion in a Solar Energy
System.*
AD-A077 112

*WATER

Reprint: Electrode Materials for
the Photoelectrolysis of Water.
AD-A069 424

*WIND

Analysis of the Technical and
Cost Feasibility of Solar and/or
Wind Energy Systems for Coast Guard
Public Quarters.*
AD-A028 332
Identification of Alternative
Power Sources for Dredged Material
Processing Operations.*
AD-A048 312

*WIND MACHINES

Wind and Solar Power Engineering--
Translation.
AD- 786 844
Analysis of Remote Site Energy
Storage and Generation Systems.*
AD-A074 869

SUBJECT INDEX-20
UNCLASSIFIED ZOM09

THE-WIN

TITLE INDEX

AD-A077 112

Calculation and Cost Optimization of Certain Solar Generators Thermobattery Parameters (K raschetu i Optimizatsii parametrov i Stoisimosti Novotipykh Parametrov Termobattarei Solnechnykh Generatorsov).

Conference on Thermodynamics and
National Energy Problems Held at
Arlie House, Warrenton, Virginia
on Jun 10-12, 1974.
AD-A012 702

Contemporary Status of Studies on

UNCLASSIFIED
EO 1.02

UNCLASSIFIED

Direct Conversion of Solar Energy to Electrical Energy (Sovremennoe Sostoyaniye Issledovaniy po Priyamomu Preobrazovaniyu Solnechnoy Energii v Elektrosheskyu).	AD- 747 293	DIRECT CONVERSION OF VARIOUS FORMS OF ENERGY INTO ELECTRIC AND MECHANICAL POWER.	AD- 668 263	AD- 285 084	ENERGY CONVERSION SYSTEMS REFERENCE HANDBOOK. VOLUME II. SOLAR-THERMAL ENERGY SOURCES
Cost Benefit of Utilizing Thermal Storage for Peak Cooling Power Leveling.	AD-A017 297	DIRECT ENERGY CONVERSION IN THE USSR, SOVIET SOLAR CONCENTRATORS: COMPREHENSIVE REPORT.	AD- 653 184	AD- 256 973	ENERGY CONVERSION SYSTEMS REFERENCE HANDBOOK. VOLUME V. DIRECT SOLAR CONVERSION
Department of the Navy Energy Fact Book.	AD-A069 138	Direct Observations of Low-Energy Solar Electrons Associated with a Type III Solar Radio Burst.	AD- 738 925	AD- 257 788	Energy Efficiency in Light-Frame Wood Construction.
Design of Solar Heating and Cooling Systems.	AD-A062 719	DODGE SATELLITE POWER SYSTEM.	AD- 669 994	AD-A038 802	Energy Fact Book-1377.
DESIGN STUDY FOR ADVANCED SOLAR THERMIONIC POWER SYSTEMS. ITEM II. PART I. VAPOR TYPE THERMIONIC GENERATOR	AD- 267 330	EARTHLY SUN OBEY.	AD- 614 023	AD- 410 932	Energy from the Ocean: An Appraisal.
DETERMINATION OF CAUSE OF PRESSURE SURGE ASSOCIATED WITH LITHIUM-FLUORIDE STEAM HEAT RECEIVER.	AD- 839 951	Economic Analysis of Solar Photovoltaics for Low-Power Lighted Aids to Navigation.	AD-A068 365	AD- 779 877	ENERGY, ITS SOURCES ON EARTH AND ITS ORIGIN. PART IV.
DEVELOPMENT OF A PHOTOEMISSIVE SOLAR ENERGY CONVERTER	AD- 288 650	Efficiencies of Various Methods for Solar Energy Conversion.	AD-A042 584	AD-A074 915	Energy Storing Organic Photoreactions.
Development of Solar Engineering in the USSR.	AD- 784 708	Electric Circuit Calculations for Multistage Solar Thermoelectric Generators.	AD- 782 041	AD-A072 308	Environmental Factors of Power Satellites.
Development of Vertical Multijunction Solar Cells for Spacecraft Primary Power. Volume II.	AD-A025 719	Electrode Materials for the Photoelectrolysis of Water.	AD-A069 424	European Scientific Notes. Volume 33. Number 7.	AN EVALUATION AND COMPARISON OF POWER SYSTEMS FOR LONG-DURATION, VARYING SPACE VEHICLES.
Digest of Equipment for Converting Solar, Wind, and Geothermal Energy into Electric Power for USN Application Ashore.	AD-A066 221	Energy and Physics--General Conference of the European Physical Society (3rd) Held in Bucharest (Romania) on 9-12 September 1975.	AD-A026 962	AD- 820 856	Evaluation of Solar Photovoltaic Arrays for Use on Marine Aids to Navigation.
		Energy Conservation in Buildings.	AD-A034 141	AD-A074 893	Experimental Evidence for the Connection between the Geomagnetic

TITLE INDEX-2
UNCLASSIFIED Z0009

COS-EXP

UNCLASSIFIED

and the Interplanetary Fields as Determined from Observations of Energetic Solar Particles.
AD- 766 715

Experimental Studies of Soil Thermal Irradiation. Volume III. Design of Flux Diversion Equipment for Soil Irradiation Testing.
AD-A058 304

EXPLORATORY STUDY TO DETERMINE FAVORABLE LOCATIONS IN THE UNITED STATES FOR CONSTRUCTION OF A SOLAR FURNACE.
AD- 699 358

Feasibility of Heating Domestic Hot Water for Apartments with Solar Energy.
AD-A028 418

Feasibility of Meeting the Energy Needs of Army Bases with Self-Generated Fuels Derived from Solar Energy Plantations.
AD-A031 163

Feasibility of Meeting the Energy Needs of Army Bases with Self-Generated Fuels Derived from Solar Energy Plantations (Appendices A, B, and C).
AD-A031 164

The Feasibility of Solar Energy Usage on Red River Army Depot.
AD-A025 119

FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME I. SUMMARY.
AD- 804 109

FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME II. MISSION ANALYSIS.
AD- 804 110

FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME III. SPACECRAFT DESIGN.
AD- 804 111

Field Test of Building Energy Analysis Tools and Procedures.
AD-A055 095

Film Solar Energy Collector with Concentric Circular Seams (Plenochnyi Konsentratör Solnechnoi Energii s Krugovymi Konsentricheskimi Shvami).
AD- 755 829

FLAT-PLATE SOLAR THERMOELECTRIC CONVERSION PANELS.
AD- 282 213

GaAs Concentrator Photovoltaic Power System Feasibility Investigation.
AD-A051 851

The Heliodevice (Gelioustanovka).
AD- 772 451

High Efficiency GaAs Solar Cell Development.
AD-A066 616

HIGH EFFICIENCY SILICON SOLAR cells.
AD- 409 001

High Efficiency Solar Panel (HESP).
AD-A043 382

High Efficiency Solar Panel (HESP-II).
AD-A065 009

High Resolution Observations of Fibril Changes in a Small Flare.
AD-A072 212

High Resolution Spectrograms of Ion-Acoustic Waves in the Solar Wind.

AD-A054 912
High-Temperature Linear Radiation-Cavity Solar Collector with a Fresnel Concentrator.
AD-A049 982

HIGH-TEMPERATURE SOLAR FURNACE.
AD- 704 754

Hoffman HSPP-1 Solar Converter.
AD- 786 384

Identification of Alternative Power Sources for Dressed Material Processing Operations.
AD-A048 312

Industrial Chemistry in Space.
AD- 720 136

Influence of the Solar Electron Energy Distribution on the Microwave Spectrum of Gyro-Synchrotron Radiation.
AD-A022 977

INSTALLATION FOR HIGH-TEMPERATURE INVESTIGATIONS OF HEAT-RESISTANT AVIATION MATERIALS AND COATINGS.
AD- 692 635

Interim Feasibility Assessment Method for Solar Heating and Cooling of Army Buildings.
AD-A026 588

Interplanetary Energy Flux Associated with Magnetospheric Substorms.
AD-A071 388

Interplanetary Particle Fluxes Observed by OVS-6 Satellite.
AD- 784 520

Interpretation of Flare-Produced Proton Spectra.
AD-A020 776

INVESTIGATION OF SOLAR

TITLE INDEX-3
UNCLASSIFIED ZOM09

EXP-INV

UNCLASSIFIED

CONCENTRATING PHOTOVOLTAIC POWER GENERATORS AD- 264 989	MATCHING A THERMIONIC CONVERTER WITH A SOLAR CELL IN A SOLAR POWER ARRAY. AD- 704 002	Parameterization of Solar Absorptivity and Transmissivity Using NIMBUS II Reflectance Data. AD-A001 253
Investigation of the Interrelationship between Direct, Diffuse, and Total Solar Radiation. AD-A072 986	Method for Estimating Solar Heating and Cooling System Performance. AD-A026 041	The Performance of an Experimental Solar Heating System. AD-A066 699
Is the Galactic Corona Produced by Galactic Flares. AD-A076 612	A Model for U-Shaped Solar Burst Spectra. AD- 747 033	Performance of Photovoltaic Cells in an Undersea Environment. AD-A066 385
Is the Right to Light a California Necessity. AD-A026 660	A MOTOR CONNECTED TO THE SUN AD- 271 829	Performance Reliability Calculation for a Modular Solar Thermoelectric Generator. AD- 757 087
Large Polarization Dependent Voltages in Ferroelectric Ceramics. AD- 785 608	Navy Applications for Terrestrial Photovoltaic Solar Power. AD- 030 529	PHOTOEMISSION SOLAR ENERGY CONVERTER AD- 264 828
LOCAL RADIATION EQUILIBRIUM TEMPERATURES IN SEMIGRAY ENCLOSURES. AD- 648 011	Net Energy Analysis Model for the Evaluation of a Solar Heating, Ventilation and Air Conditioning System. AD-A047 433	PHOTOEMISSION ENERGY CONVERSION APPLIED RESEARCH PROGRAM AD- 294 000
LONG-LIFE THERMIONIC CONVERTERS FOR SOLAR POWER SYSTEMS AD- 293 004	NO UNCLASSIFIED TITLE AD- 256 748	Photoisomerization of Bis(9-Anthryl)Methane and other Linked Anthracenes. The Role of Excimers and Biradicals in Photodimerization. AD-A051 336
Low Reflectivity Solar Cells. AD-A025 922	Nonreflecting Vertical Junction Silicon Solar Cell Optimization. AD-A046 150	Photon Energy Storage in Organic Materials: The Case of Linked Anthracenes. AD-A039 702
Low Resistivity-High Minority Carrier Lifetime Single Crystal Silicon Investigation. AD-A077 684	Nonreflecting Vertical Junction Silicon Solar Cell Optimization. AD-A064 431	Photosensitization Mechanisms for Energy Storing Isomerizations. AD-A074 968
Low Temperature Fabrication of High Efficiency Silicon Solar Cells. AD-A061 956	Notes on Optical Design Principles, Concentration Ratios, and Maximum Temperatures of Parabolic Solar Furnaces. AD-A001 056	PHOTOVOLTAIC AND THERMOELECTRIC SOLAR ENERGY CONVERSION USING THIN FILMS. AD- 686 496
Market Evaluation Study: Solar Domestic Water Heaters for DOD barracks. AD-A036 479	An Observational Search for Large-Scale Organization of Five-Minute Oscillations on the Sun. AD-A047 842	PHOTOVOLTAIC POWER SYSTEMS USING HIGH SOLAR ENERGY FLUXES. AD- 629 241
Market Evaluation Study: Solar Heating and Domestic Hot Water Heating in DOD Buildings. AD-A042 178	OPTIC IN INSTALLATIONS FOR THE UTILIZATION OF SOLAR ENERGY AD- 255 609	

TITLE INDEX-4
UNCLASSIFIED Z0V09

INV-PHO

UNCLASSIFIED

Satellite Observations of Polar, Magnetotail Lobe, and Interplanetary Electrons at Low Energies.
AD-A050 640

Satellite Solar Station.
AD-A061 961

Second Interim Technical Report on USAF Solar Test House.
AD-A045 042

Selective-Black Absorbers Using Sputtered Cermet Films.
AD-A059 423

Semiconductor Photoconvertors.
AD- 753 063

Semiconductor Solar Energy Converters and the Phenomenon of Photo (Conductivity) Quenching (Poluprovodnikovye Preobrazovateli Solnechnoi Energii i Yavlenie Jasneniya Fotoprovodimosti).
AD- 743 031

Simplified Fabrication of GaAs Homojunction Solar Cells with Increased Conversion Efficiencies.
AD-A058 281

Solar Air - Conditioning Study.
AD-A043 951

Solar and Wind Power to Be Harnesses (Energiyu Solntsa i Vetra - y Ubyayazhit).
AD- 765 783

Solar Assisted Heat Pump Study for Heating of Military Facilities.
AD-A058 626

SOLAR BATTERIES OF THE FUTURE
AD- 286 578

Solar Battery-Photovoltaic Cell Power Supply for Equipment (Ustroistvo Dlya Pitaniya Potrebnoi Ot Solnechnoi Batarei S Fotoprovodno Vateiyami).
AD- 748 694

Solar Cell Power for Field Instrumentation at White Sands Missile Range.
AD-A053 960

SOLAR CELL POWER SYSTEMS FOR AIR FORCE SATELLITES.
AD- 654 205

SOLAR CELL POWER SYSTEMS FOR APL SATELLITES.
AD- 668 144

Solar Cells: Plugging into the Sun.
AD-A059 319

Solar Collector Thermal Power System. Volume I. Preliminary Technology Systems Study.
AD-A000 940

Solar Collector Thermal Power System. Volume II. Development, Fabrication, and Testing of Fifteen Foot Heat Pipes.
AD-A000 941

Solar Electric Generating System Resource Requirements and the Feasibility of Orbiting Solar Reflectors.
AD-A048 908

SOLAR ELECTRIC POWER STATIONS
AD- 299 207

Solar Electron Access to the Magnetosphere.
AD- 770 319

Solar Energy.
AD- 778 246

Solar Energy.
AD-A038 600

Solar Energy Design Improvement: A

Technology for Hydronic Flat Plate Collector Systems.
AD-A076 836

Solar Energy for the Naval Shore Establishment.
AD-A050 026

Solar Energy Storage.
AD-A028 083

SOLAR FLAT PLATE THERMOELECTRIC GENERATOR RESEARCH.
AD- 418 322

Solar Heat Source Feasibility Study.
AD- 879 939

Solar Heating and Cooling of Buildings Study Conducted for Department of the Army. Volume I: Executive Summary and Implementation Plans.
AD-A002 576

Solar Heating and Cooling of Buildings Study Conducted for Department of the Army. Volume II. Technical Report.
AD-A002 563

Solar Heating Feasibility Study.
AD-A025 465

Solar Heating of Buildings and Domestic Hot Water.
AD-A054 601

Solar Heating Retrofit of Military Family Housing.
AD-A030 843

SOLAR ORIENTING DEVICE FOR EXPANDABLE FLAT-PANEL ARRAY
AD- 273 551

Solar Photoabsorption and Thermal Processes in the Polar Thermosphere.
AD- 735 305

TITLE INDEX-6
UNCLASSIFIED ZOM09

SAT-SOL

UNCLASSIFIED

A Solar Power Radiometer. AD-A039 995	Electron-Transfer Reactions: Experimental Realization, AD-A078 144	Technical Review and Analysis of National Energy Research and Development Programs and Proposals (Phase II). AD-A008 887
Solar-Powered Laser Communications System for Space. AD-A046 763	STUDY OF A THERMOPHOTOVOLTAIC CONVERTER. AD- 431 557	Technology Transfer in Science, Technology and Public Policy. AD-A073 190
Solar-Powered Sun Tracker. AD-A078 653	A Study of Conventional and Unconventional RADIAC Power Sources. AD- 721 662	TEMPERATURE CONTROL TECHNIQUE FOR SOLAR ENERGY CONVERTERS AD- 274 922
SOLAR THERMOELECTRIC GENERATOR SYSTEM CONCEPT AND FEASIBILITY STUDY. AD- 415 024	Study of Phototechnical Characteristics of Polymer Films Used as Transparent Coatings in Solar Water Heaters (Issledovanie Svotekhnicheskikh Kharakteristik Polimernykh Plenok, Primenyaemykh dlya Prozharnogo Pokrytiya v Geliopodnagrevatelyakh). AD- 742 111	Thermodynamic Analysis and Parameter Optimization of a Solar Thermoelectric Power Unit with Radiation Heat Dissipation. AD-A000 211
Space Electric Power Plants. Part 2. AD- 756 039	A Study of 'Photovolt' Generator at High Radiation Intensity (Issledovanie Elektricheskikh Kharakteristik Generatorov 'Photovolt' pri Povyshennoi Moshchnosti Izlucheniya). AD- 745 364	Thin-Film Conducting Microgrids as Transparent Heat Mirrors. AD-A027 110
Space Electric Power Plants. Part I (Litsom k Solntsu), AD- 741 524	Study of Solar-Energy Use in Marine Navigation Aids. AD- 786 935	Third Interim Technical Report on USAF Solar Test House Design Parameters. AD-A060 458
SPACE ELECTRICAL POWER SYSTEMS FOR THE MID-1970'S. AD- 701 352	Summary of Parabolic Solar Furnace Performance Design. AD-A001 063	THORIA SINGLE CRYSTALS GROWN BY VAPOR DEPOSITION IN A SOLAR FURNACE. AD- 652 752
SPACE LINKAGE SYSTEM. ANALYTICAL STUDY AND PRELIMINARY DESIGN. VOLUME I. AD- 816 039	A Survey of Considerations for Solar Energy Facility Applications. AD-A049 490	Transparent Heat-Mirror Films of TiO ₂ /Ag/TiO ₂ for Solar Energy Collection and Radiation Insulation. AD-A007 692
SPACE LINKAGE SYSTEM. ANALYTICAL STUDY AND PRELIMINARY DESIGN. VOLUME II. APPENDICES. AD- 816 040	Survivability of Remote Site Alternate Energy Systems. Volume I. Survivability Analysis. AD-A078 118	Transparent Heat Mirrors for Solar- Energy Applications. AD-A027 107
SPACE POWER SUPPLY STUDY. AD- 672 772	Technical Guidelines for Energy Conservation. AD-A041 668	A Two-Dimensional Global Climatic Model. AD-A028 548
SPACE POWER SYSTEMS. PART I. AD- 698 652		U.S. Navy Energy R and D Progress, 1977. AD-A053 428
SPACE POWER SYSTEMS. PART II. AD- 698 653		
A SPLINTER OF THE SUN AD- 255 389		
The Step Excitation Method for Studying Reversible Excited-State		

TITLE INDEX-7
UNCLASSIFIED Z0W03

ASD-U.S

UNCLASSIFIED

U.S. Navy Energy R and D Progress
October 1976-March 1977.
AD-A039 546

UNFUELED POWER SUPPLY FOR ISOLATED
BASES ON SEA ICE
AD- 263 905

Upper Limits to the Quiet-Time
Solar Neutron Flux from 10 to 100
MeV.
AD-A015 672

USAF Terrestrial Energy Study.
Volume III. Part 2. Energy
Conversion Systems Handbook.
AD-A057 252

Very Large Array (V.L.A.)
Observations of Solar Active
Regions.
AD-A066 780

'Water Splitting' by Titanium
Exchanged Zeolite A.
AD-A059 131

Wind and Solar Power Engineering.
AD- 786 844

Work in UK on the Applications of
Solar Cells in Space.
AD-A011 084

TITLE INDEX-8
UNCLASSIFIED ZOM09

U.S-WOR

UNCLASSIFIED

PERSONAL AUTHOR INDEX

- *ACABAEV, CH. * * *
Electric Circuit Calculations for
Multistage Solar Thermoelectric
Generators.
AD- 782 041
- *AKASOFU, S.-I. * * *
Interplanetary Energy Flux
Associated with Magnetospheric
Substorms.
AD-A071 388
- *ALEKSEEV, G. N. * * *
DIREC CONVERSION OF VARIOUS FORMS
OF ENERGY INTO ELECTRIC AND
MECHANICAL POWER.
AD- 668 263
- *ALEKSENKO, G. * * *
Solar and Wind Power to Be
Harnessed (Energiyu Solntsa i Vetra
- v Upravlenii).
AD- 765 783
- *ALLEN, G. E. * * *
LOCAL RADIATION EQUILIBRIUM
TEMPERATURES IN SEMIGRAY
ENCLOSURES.
AD- 648 011
- *ALLEN, WILLIAM R. * * *
Economic Analysis of Solar
Photovoltaics for Low-Power Lighted
Aids to Navigation.
AD-A068 365
- *ANDERSON, L. A. * * *
Analysis of Remote Site Energy
Storage and Generation Systems.
AD-A074 869
- *ANNAEV, A. A. * * *
HIGH-TEMPERATURE SOLAR FURNACE.
- *ANNAEV, O. * * *
Electric Circuit Calculations for
Multistage Solar Thermoelectric
Generators.
AD- 782 041
- *ANTONIAK, ZENEN I. * * *
High-Temperature Linear Radiation-
Cavity Solar Collector with a
Fresnel Concentrator.
AD-A049 982
- *ARAZMEDOV, B. * * *
Electric Circuit Calculations for
Multistage Solar Thermoelectric
Generators.
AD- 782 041
- *ARBO, P. E. * * *
Analysis of the Technical and Cost
Feasibility of Solar and/or Wind
Energy Systems for Coast Guard
Public Quarters.
AD-A028 332
- *ARIFOV, U. A. * * *
MATCHING A THERMIONIC CONVERTER
WITH A SOLAR CELL IN A SOLAR POWER
ARRAY.
AD- 704 002
- *ATLYEV, K. * * *
Development of Solar Engineering in
the USSR.
AD- 784 708
- *BAKSHI, PRADIP * * *
A Model for U-Shaped Solar Burnst
Spectra.
AD- 747 033
- *BARRY, JAMES D. * * *
Solar-Powered Laser Communications
System for Space.
AD-A046 763
- *BAUM, V. A. * * *
HIGH-TEMPERATURE SOLAR FURNACE.
AD- 704 754
- *BAZQUES, E. O. * * *
- *BACHNER, FRANK J. * * *
Transparent Heat-Mirror Films of
TiO₂/Ag/TiO₂ for Solar Energy
Collection and Radiation
Insulation.
AD-A007 892
- * * *
Properties of Sn-Doped In2O₃ Films
Prepared by RF Sputtering.
AD-A024 234
- * * *
Transparent Heat Mirrors for Solar-
Energy Applications.
AD-A027 105
- * * *
Thin-Film Conducting Microgrids as
Transparent Heat Mirrors.
AD-A027 110
- *BAIRD, GLENN T. * * *
Survivability of Remote Site
Alternate Energy Systems. Volume I.
Survivability Analysis.
AD-A078 118
- *BAKER, JOEL K. * * *
TEMPERATURE CONTROL TECHNIQUE FOR
SOLAR ENERGY CONVERTERS
AD- 274 922
- *BAKSHI, PRADIP * * *
A Model for U-Shaped Solar Burnst
Spectra.
AD- 747 033
- *BARRY, JAMES D. * * *
Solar-Powered Laser Communications
System for Space.
AD-A046 763
- *BAUM, V. A. * * *
HIGH-TEMPERATURE SOLAR FURNACE.
AD- 704 754
- *BAZQUES, E. O. * * *

PERSONAL AUTHOR INDEX-1
UNCLASSIFIED
ZOM03

UNCLASSIFIED

- * * *
 Projections of Energy Availability,
 Cost, and Aggregate Demand for
 1975, 1980, 1985 and 1990.
 AD-A010 712
- *BEASON, FREDDIE L. * * *
 Solar Assisted Heat Pump Study for
 Heating of Military Facilities.
 AD-A058 626
- *BEAULAUER, L. O. * * *
 Assessment of Total Energy Systems
 for the Department of Defense.
 Volume 2. Appendices.
 AD- 781 817
- *BECK, E. J., JR * * *
 Solar Heating of Buildings and
 Domestic Hot Water.
 AD-A054 601
- *BECKETT, C. W. * * *
 Conference on Thermodynamics and
 National Energy Problems Held at
 Airline House, Warrenton, Virginia
 on Jun 10-12, 1974.
 AD-A012 702
- *BECKMAN, W. * * *
 PHOTOVOLTAIC POWER SYSTEMS USING
 HIGH SOLAR ENERGY FLUXES.
 AD- 629 241
- *BERDYEV, B. M. * * *
 Electric Circuit Calculations for
 Multistage Solar Thermoelectric
 Generators.
 AD- 782 041
- *BERGMARK, WILLIAM R. * * *
 Proton Energy Storage in Organic
 Materials: The Case of Linked
 Anthracenes.
- AD-A039 702 * * *
 Photoisomerization of Bis(9-
 Anthryl)Methane and other Linked
 Anthracenes. The Role of Excimers
 and Biradicals in
 Photodimerization.
 AD-A051 336
- *BERMAN, PAUL A * * *
 HIGH EFFICIENCY SILICON SOLAR
 cells.
 AD- 409 001
- *BERSTEIN, H. M. * * *
 Projections of Energy Availability,
 Cost, and Aggregate Demand for
 1975, 1980, 1985 and 1990.
 AD-A010 712
- *BISHOP, W. S. * * *
 Analysis of Remote Site Energy
 Storage and Generation Systems.
 AD-A074 869
- *BLAKE, J. B. * * *
 Rapid Access of Solar Electrons to
 the Polar Caps.
 AD- 744 404
- *BLAKE, J. BERNARD * * *
 PROPAGATION OF SOLAR PARTICLES TO
 THE POLAR CAPS.
 AD- 701 739
- *BLISS, RAYMOND W., JR * * *
 Rapid Access of Solar Electrons to
 the Polar Caps.
 AD- 736 430
- *BLISS, RAYMOND W., JR * * *
 Summary of Parabolic Solar Furnace
 Performance Design.
 AD-A001 663
- Notes on Optical Design Principles,
- Concentration Ratios, and Maximum
 Temperatures of Parabolic Solar
 Furnaces.
 AD-A001 066
- *BOBCO, R. P. * * *
 LOCAL RADIATION EQUILIBRIUM
 TEMPERATURES IN SEMICRY
 ENCLOSURES.
 AD- 648 011
- *BOESEN, DENNIS L. * * *
 Satellite Mounted Tracking Optics
 to Continuously Pump Sun-Pumped
 Laser.
 AD-A000 040
- *BOND, JOHN W., JR * * *
 Solar Cell Power for Field
 Instrumentation at White Sands
 Missile Range.
 AD-A053 960
- *BOZLER, CARL O. * * *
 Simplified Fabrication of GaAs
 Heterojunction Solar Cells with
 Increased Conversion Efficiencies.
 AD-A058 281
- *BREIG, EDWARD L. * * *
 Solar Photoabsorption and Thermal
 Processes in the Polar
 Thermosphere.
 AD- 735 305
- *BREWER, LEO * * *
 Conference on Thermodynamics and
 National Energy Problems Held at
 Airline House, Warrenton, Virginia
 on Jun 10-12, 1974.
 AD-A012 702
- *BRODY, PHILIP S. * * *
 Large Polarization Dependent

PERSONAL AUTHOR INDEX-2
 UNCLASSIFIED Z0W03

BEA-BRO

UNCLASSIFIED

- Voltages in Ferroelectric Ceramics,
AD- 785 608
- *BROWN, REX V. * * *
An Attitudinal Study of the Home
Market for Solar Devices.
AD-A045 082
- *BRUSH, DANIEL S. * * *
FLAT-PLATE SOLAR THERMOELECTRIC
CONVERSION PANELS.
AD- 282 213
- *BUCK, ERIK S. * * *
Satellite Mounted Tracking Optics
to Continuously Pump Sun-Pumped
Laser.
AD-A000 040
- *CALDWELL, WALTER F. * * *
Satellite Mounted Tracking Optics
to Continuously Pump Sun-Pumped
Laser.
AD-A000 040
- *CAMPBELL, VINCENT N. * * *
An Attitudinal Study of the Home
Market for Solar Devices.
AD-A045 082
- *CARLSON, A. * * *
USAF Terrestrial Energy Study.
Volume III, Part 2. Energy
Conversion Systems Handbook.
AD-A057 252
- *CHAPMAN, RALPH L. * * *
Simplified Fabrication of GaAs
Homojunction Solar Cells with
Increased Conversion Efficiencies.
AD-A058 281
- *CHIANG, SHEAU HWA * * *
- Photosensitization Mechanisms for
Energy Storing Isomerizations.
AD-A074 968
- *CHING, BARBARA K. * * *
Solar Photoabsorption and Thermal
Processes in the Polar
Thermosphere.
AD- 735 305
- Annual and Sub-Annual Effects of
EUV (Extreme Ultraviolet) Heating.
Volume I. Harmonic Analysis,
AD- 745 305
- Annual and Sub-Annual Effects of
EUV (Extreme Ultraviolet) Heating.
Volume II. Comparison with Density
Observations,
AD- 745 309
- Environmental Factors of Power
Satellites.
AD-A072 308
- *CHIU, YAM T. * * *
Annual and Sub-Annual Effects of
EUV (Extreme Ultraviolet) Heating.
Volume I. Harmonic Analysis,
AD- 745 305
- Annual and Sub-Annual Effects of
EUV (Extreme Ultraviolet) Heating.
Volume II. Comparison with Density
Observations,
AD- 745 309
- Environmental Factors of Power
Satellites.
AD-A072 308
- *CHRIST, MATT A. * * *
Net Energy Analysis Model for the
Evaluation of a Solar Heating,
Ventilation and Air Conditioning
System.
AD-A047 433
- *CHUANG, CHIEWEI * * *
Influence of the Solar Electron
Energy Distribution on the
Microwave Spectrum of Gyro-
Synchrotron Radiation.
AD-A022 977
- *CIANI, J. B. * * *
Identification of Alternative Power
Sources for Dredged Material
Processing Operations.
AD-A048 312
- *CONNORS, T. T. * * *
The Potential of Indigenous Energy
Resources for Remote Military
Bases.
AD-A022 829
- *CONSRÖE, T. * * *
Alternative Strategies for
Optimizing Energy Supply,
Distribution, and Consumption
Systems on Naval Bases. Volume II.
Advanced Energy Conservation
Strategies.
AD- 786 757
- *COOLIDGE, CHARLES H., JR * * *
Satellite Mounted Tracking Optics
to Continuously Pump Sun-Pumped
Laser.
AD-A000 040
- *CREIGHTON, J. W. * * *
Technology Transfer in Science,
Technology and Public Policy,
AD-A073 190
- *CRISP, J. N. * * *
Analysis of Remote Site Energy
Storage and Generation Systems.
AD-A074 869

PERSONAL AUTHOR INDEX-3
UNCLASSIFIED Z0W09

BRO-CRI

*CROWDER, GERALD W. * * *

The Feasibility of Solar Energy
Usage on Red River Army Depot.
AD-A025 119

*CROWNE, FRANK * * *

Large Polarization Dependent
Voltages in Ferroelectric Ceramics,
AD- 785 608

*DAUGHTON, A. J. * * *

SPACE LINKAGE SYSTEM. ANALYTICAL
STUDY AND PRELIMINARY DESIGN.
VOLUME I.
AD- 816 039

* * *

SPACE LINKAGE SYSTEM. ANALYTICAL
STUDY AND PRELIMINARY DESIGN.
VOLUME II. APPENDICES.
AD- 816 040

*DRABKIN, L. M. * * *

Calculation and Cost Optimization
of Certain Solar Generator
Thermobattery Parameters (K
raschetu i Optimizatsii po
Stoimosti Nekotorykh Parametrov
Termobatarei Solnechnykh
Generators),
AD- 759 812

* * *

Thermodynamic Analysis and
Parameter Optimization of a Solar
Thermoelectric Power Unit with
Radiation Heat Dissipation,
AD-A000 211

*DURHAM, DAVID R. * * *

Satellite Mounted Tracking Optics
to Continuously Pump Sun-Pumped
Laser.
AD-A000, 040

*DVERNYAKOV, V. S. * * *

INSTALLATION FOR HIGH-TEMPERATURE
INVESTIGATIONS OF HEAT-RESISTANT
AVIATION MATERIALS AND COATINGS,
AD- 692 635

*EDEN, ANTHONY * * *

Second Interim Technical Report on
USAF Solar Test House.
AD-A045 042

* * *

Third Interim Technical Report on
USAF Solar Test House Design
AD-A047 842

*DEWAS, JAMES N. * * *

The Step Excitation Method for
Studying Reversible Excited-State
Electron-Transfer Reactions:
Experimental Realization,
AD-A078 144

*DEWITTE, MICHAEL D. * * *

Alternative Energy Sources for
United States Air Force
Installations.
AD-A014 858

*DITTMER, PHIL H. * * *

An Observational Search for Large-
Scale Organization of Five-Minute
Oscillations on the Sun.
AD-A047 842

*DOTSON, R. O. * * *

SPACE LINKAGE SYSTEM. ANALYTICAL
STUDY AND PRELIMINARY DESIGN.
VOLUME I.
AD- 816 039

* * *

SPACE LINKAGE SYSTEM. ANALYTICAL
STUDY AND PRELIMINARY DESIGN.
VOLUME II. APPENDICES.
AD- 816 040

*DRABKIN, L. M. * * *

Calculation and Cost Optimization
of Certain Solar Generator
Thermobattery Parameters (K
raschetu i Optimizatsii po
Stoimosti Nekotorykh Parametrov
Termobatarei Solnechnykh
Generators),
AD- 759 812

* * *

Thermodynamic Analysis and
Parameter Optimization of a Solar
Thermoelectric Power Unit with
Radiation Heat Dissipation,
AD-A000 211

*DURHAM, DAVID R. * * *

Satellite Mounted Tracking Optics
to Continuously Pump Sun-Pumped
Laser.
AD-A000, 040

*DVERNYAKOV, V. S. * * *

INSTALLATION FOR HIGH-TEMPERATURE
INVESTIGATIONS OF HEAT-RESISTANT
AVIATION MATERIALS AND COATINGS,
AD- 692 635

*EDEN, ANTHONY * * *

Second Interim Technical Report on
USAF Solar Test House.
AD-A045 042

* * *

Third Interim Technical Report on
USAF Solar Test House Design
AD-A047 842

*DEWAS, JAMES N. * * *

The Step Excitation Method for
Studying Reversible Excited-State
Electron-Transfer Reactions:
Experimental Realization,
AD-A078 144

*DEWITTE, MICHAEL D. * * *

Alternative Energy Sources for
United States Air Force
Installations.
AD-A014 858

*DITTMER, PHIL H. * * *

An Observational Search for Large-
Scale Organization of Five-Minute
Oscillations on the Sun.
AD-A047 842

*Parameters.

AD-A060 458

*ELISEEV, V. N. * * *

Study of Phototechnical
Characteristics of Polymer Films
Used as Transparent Coatings in
Solar Water Heaters (Issledovanie
Svetotekhnicheskikh Kharakteristik
Polimernykh Plenok, Primenyaemykh
dlya Prozharnogo Pokrytiya v
Geliovodonagrevatelyakh),
AD- 742 111

*ENER, ROLF C. * * *

Solar Electric Generating System
Resource Requirements and the
Feasibility of Orbiting Solar
Reflectors.
AD-A048 908

*EVANS, J. C., JR. * * *

PHOTOVOLTAIC AND THERMOELECTRIC
RADIATION ENERGY CONVERSION USING THIN
FILMS,
AD- 686 496

*EVANS, W. * * *

ENERGY CONVERSION SYSTEMS REFERENCE
HANDBOOK. VOLUME V. DIRECT SOLAR
CONVERSION
AD- 257 788

*EYRING, EDWARD M. * * *

'Water Splitting' by Titanium
Exchanged Zeolite A.
AD-A059 131

*FALCOVER, DONALD * * *

Proceedings of Annual Symposium
'Energy Research and Development'
(5th) on 13-14 March 1974,
Sponsored by the American Defense
Preparedness Association,
AD-A007 799

PERSONAL AUTHOR INDEX-4
UNCLASSIFIED ZOMQ9

CRO-FAL

UNCLASSIFIED

- *FAN, JOHN C. * * *
Transparent Heat-Mirror Films of
TiO₂/Ag/TiO₂ for Solar Energy
Collection and Radiation
Insulation.
AD-A007 892
- * * *
Transparent Heat Mirrors for Solar-
Energy Applications.
AD-A027 105
- * * *
Thin-Film Conducting Microgrids as
Transparent Heat Mirrors.
AD-A027 110
- * * *
Solar Cells: Plugging into the Sun.
AD-A069 319
- * * *
Selective-Black Absorbers using
Sputtered Cermet Films.
AD-A069 423
- *FAN, JOHN C. C. * * *
Properties of Sn-Doped In₂O₃ Films
Prepared by RF Sputtering.
AD-A024 234
- * * *
Simplified Fabrication of GaAs
Homojunction Solar Cells with
Increased Conversion Efficiencies.
AD-A058 281
- *FARADAY, B. J. * * *
Navy Applications for Terrestrial
Photovoltaic Solar Power.
AD-A030 529
- *FENNELL, JOSEPH F. * * *
Satellite Observations of Polar,
Magnetotail Lobe, and
Interplanetary Electrons at Low
Energies.
AD-A050 640
- *FIELD, R. L. * * *
Solar Heating of Buildings and
- *FRANK, L. A. * * *
Direct Observations of Low-Energy
Solar Electrons Associated with a
Type III Solar Radio Burst.
AD-738 925
- *FULLER, CLYDE * * *
Development of Vertical
Multijunction Solar Cells for
Spacecraft Primary Power. Volume
II.
AD-A025 719
- *FULLER, D. * * *
USAF Terrestrial Energy Study.
Volume III. Part 2. Energy
Conversion Systems Handbook.
AD-A057 252
- *GANNON, R. E. * * *
THORIA SINGLE CRYSTALS GROWN BY
VAPOR DEPOSITION IN A SOLAR
FURNACE.
AD-652 752
- *GARCIA, A. F. * * *
Analysis of the Technical and Cost
Feasibility of Solar and/or Wind
Energy Systems for Coast Guard
Public Quarters.
AD-A028 332
- *GAUSS, ARTHUR, JR. * * *
Solar Energy Storage.
AD-A028 083
- *GAY, CHARLES * * *
High Efficiency Solar Panel (HESP).
AD-A043 382
- *GEIBEL, BRUCE BURGEE * * *
Solar Energy for the Naval Shore
Establishment.
- Domestic Hot Water.
AD-A054 601
- *FINE, S. B. * * *
FEASIBILITY STUDY OF AN ION-
PROPELLED MARS ORBITER/LANDER
SPACECRAFT WITH SOLAR PHOTOVOLTAIC
POWER. VOLUME I. SUMMARY.
AD-804 109
- * * *
FEASIBILITY STUDY OF AN ION-
PROPELLED MARS ORBITER/LANDER
SPACECRAFT WITH SOLAR PHOTOVOLTAIC
POWER. VOLUME II. MISSION ANALYSIS.
AD-804 110
- * * *
FEASIBILITY STUDY OF AN ION-
PROPELLED MARS ORBITER/LANDER
SPACECRAFT WITH SOLAR PHOTOVOLTAIC
POWER. VOLUME III. SPACECRAFT
DESIGN.
AD-804 111
- *FISCHELL, ROBERT E. * * *
SOLAR CELL POWER SYSTEMS FOR APL
SATELLITES.
AD-668 144
- *FOGELSON, S. * * *
USAF Terrestrial Energy Study.
Volume III. Part 2. Energy
Conversion Systems Handbook.
AD-A057 252
- *FOLEY, GEORGE H. * * *
Transparent Heat-Mirror Films of
TiO₂/Ag/TiO₂ for Solar Energy
Collection and Radiation
Insulation.
AD-A007 892
- *FOWLER, PETER * * *
DEVELOPMENT OF A PHOTOEMISSIVE
SOLAR ENERGY CONVERTER
AD-288 650

PERSONAL AUTHOR INDEX-5
UNCLASSIFIED Z0403

FAN-GEI

UNCLASSIFIED

AD-A050 026

*GERBER, BERNARD

Proceedings of Annual Symposium
'Energy Research and Development'
(5th) on 13-14 March 1974,
Sponsored by the American Defense
Preparedness Association,
AD-A007 799

*GIOVANE, FRANK

Coast Guard Marine Exposure
Facilities for Naturally Aging
Solar Photovoltaic Modules.
AD-A067 891

*GITTLEMAN, J. I.

Application of Granular
Semiconductors to Photothermal
Conversion of Solar Energy,
AD-A027 547

*GOEN, RICHARD L.

Assessment of Total Energy Systems
for the Department of Defense -
Volume 1.
AD- 781 816

Assessment of Total Energy Systems
for the Department of Defense.
Volume 2. Appendices.
AD- 781 817

*GOLD, R. E.

Prediction of Solar Energetic
Particle Event Histories Using Real-
Time Particle and Solar Wind
Measurements.
AD-A028 057

*GOLTZ, G.

Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems Program
Documentation. Volume II - User's

Manual.
AD-A047 356

* * *

Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems Program
Documentation. Volume III -
Programmer's Manual.
AD-A047 542

* * *

Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems. Program
Documentation, Volume I. Software
Requirements Document.
AD-A047 925

*GRAHAM, BILLIE J.

Solar Heating Feasibility Study.
AD-A025 465

* * *

Feasibility of Heating Domestic Hot
Water for Apartments with Solar
Energy.
AD-A028 418

*GREENWALD, ANTON C.

Low Temperature Fabrication of High
Efficiency Silicon Solar Cells.
AD-A061 956

*GRIFFIN, OWEN M.

Energy from the Ocean: An
Appraisal.
AD- 779 877

*GRIGORYAN, R. S.

Solar Battery-Photovoltaic Cell
Power Supply for Equipment
(Ustroistvo Dlya Pitaniya
Potrebitelei Ot Solnechnoi Batarei
S Fotoprebrazovatel'nyami),
AD- 748 694

*GUENZER, C. S.

Navy Applications for Terrestrial

PERSONAL AUTHOR INDEX-6
UNCLASSIFIED Z0W09

Photovoltaic Solar Power.
AD-A030 529

*GUNER, K. A.

* * *

The Application of Phenol-
Formaldehyde Plastic Foam as
Thermal Insulation for Solar Water
Heaters (Primeneniye Fenolo-
Formaldegidnogo Penoplasta u
Kachestve Teploizolyatsii dlya
Geliyovodonagrevatelei),
AD- 756 591

*GURNETT, D. A.

* * *

Direct Observations of Low-Energy
Solar Electrons Associated with a
Type III Solar Radio Burst,
AD- 738 925

* * *

High Resolution Spectrograms of Ion-
Acoustic Waves in the Solar Wind.
AD-A054 912

*HALPERN, ARTHUR M.

* * *

Photoisomerization of Bis(9-
Anthryl)Methane and other Linked
Anthracenes. The Role of Excimers
and Biradicals in
Photodimerization.
AD-A051 336

*HAMMOND, DAVID A.

* * *

CADMIUM SULFIDE SOLAR GENERATOR
AD- 053 603

* * *

CADMIUM SULFIDE SOLAR GENERATOR
AD- 066 783

* * *

CADMIUM SULFIDE SOLAR GENERATOR
AD- 069 093

* * *

CADMIUM SULFIDE SOLAR GENERATOR
AD- 099 917

* * *

A CADMIUM SULFIDE SOLAR ENERGY
GENERATOR
AD- 101 783

GER-HAM

UNCLASSIFIED

- *HANDY, ROLAND J. * * *
HIGH EFFICIENCY SILICON SOLAR
cells.
AD- 409 001
- *HANS, GUNARD E. * * *
Energy Efficiency in Light-Frame
Wood Construction.
AD-A071 676
- *HANSEN, FREDERICK A. * * *
Interplanetary Particle Fluxes
Observed by OVS-6 Satellite.
AD- 784 520
- *HARRIS, WILLIAM R. * * *
Is the Right to Light a California
Necessity.
AD-A026 660
- *HEALY, DONALD JEREMIAH * * *
Parameterization of Solar
Absorptivity and Transmissivity
Using NIMBUS II Reflectance Data.
AD-A001 253
- *HEDMAN, PAUL * * *
Absorption Air Conditioning.
AD-A022 079
- *HEIM, J. R. * * *
SPACE LINKAGE SYSTEM. ANALYTICAL
STUDY AND PRELIMINARY DESIGN.
VOLUME I.
AD- 816 039
- *HEMPHILL, C. W. * * *
Analysis of the Technical and Cost
- Feasibility of Solar and/or Wind
Energy Systems for Coast Guard
Public Quarters,
AD-A028 332
- *HESS, F.O. * * *
ENERGY CONVERSION RESEARCH PROGRAM.
DIRECT CONVERSION OF CHEMICAL
ENERGY TO ELECTRICAL ENERGY
AD- 285 084
- *HEWITSON, VICTORIA S. * * *
European Scientific Notes. Volume
33, Number 7.
AD-A075 097
- *HIMLE, ARTHUR N. * * *
FLAT-PLATE SOLAR THERMOELECTRIC
CONVERSION PANELS.
AD- 282 213
- *HINKLE, B. K. * * *
Projections of Energy Availability,
Cost, and Aggregate Demand for
1975, 1980, 1985 and 1990.
AD-A010 712
- *HIRSHMAN, JULES * * *
A Preliminary Design, Economic and
Energy Analysis, and Environmental
Impact Assessment for a Seawater
Cooling Project Naval Security
Group Facilities at Winter Harbor,
Maine.
AD-A056 603
- *HITTLE, D. C. * * *
Predicting the Performance of Solar
Energy Systems.
AD-A035 608
- *HITTLE, DOUG * * *
Interim Feasibility Assessment
Method for Solar Heating and
- Cooling of Army Buildings.
AD-A026 588
- *HITTLE, DOUGLAS * * *
Market Evaluation Study: Solar
Domestic Water Heaters for DOD
barracks.
AD-A036 479
- *HITTLE, DOUGLAS C. * * *
Method for Estimating Solar Heating
and Cooling System Performance.
AD-A026 041
- *FIELD TEST OF BUILDING ENERGY
ANALYSIS TOOLS AND PROCEDURES.
AD-A055 095
- *DESIGN OF SOLAR HEATING AND COOLING
SYSTEMS.
AD-A062 719
- *HOLLER, C. E., JR. * * *
Conference on Thermodynamics and
National Energy Problems Held at
Airlie House, Warrenton, Virginia
on Jun 10-12, 1974.
AD-A012 702
- *HOLSHOUSER, D. * * *
Interim Feasibility Assessment
Method for Solar Heating and
Cooling of Army Buildings.
AD-A026 588
- *HOLSHOUSER, D. F. * * *
Predicting the Performance of Solar
Energy Systems.
AD-A035 608
- *HOLSHOUSER, DONALD F. * * *
Method for Estimating Solar Heating
and Cooling System Performance.
AD-A026 041

PERSONAL AUTHOR INDEX-7
UNCLASSIFIED Z0X09

HAN-HOL

UNCLASSIFIED

- *HOPKINS, KENNETH N. * * *
DETERMINATION OF CAUSE OF PRESSURE
SURGE ASSOCIATED WITH LITHIUM-
FLUORIDE STEAM HEAT RECEIVER.
AD- 839 951
- *HOUGHTON, A. * * *
Experimental Studies of Soil
Thermal Irradiation. Volume III.
Design of Flux Diversion Equipment
for Soil Irradiation Testing.
AD-A058 304
- *HRAPLA, MICHAEL F. * * *
Net Energy Analysis Model for the
Evaluation of a Solar Heating,
Ventilation and Air Conditioning
System.
AD-A047 433
- *HUBBARD, WARD * * *
Conference on Thermodynamics and
National Energy Problems Held at
Airlie House, Warrenton, Virginia
on Jun 10-12, 1974.
AD-A012 702
- *HUBLER, G. K. * * *
Navy Applications for Terrestrial
Photovoltaic Solar Power.
AD-A030 529
- *HUCKE, EDWARD E. * * *
Report of the Materials Research
Council (1973).
AD- 771 302
- Preliminary Reports, Memoranda and
Technical Notes of the Materials
Research Council Summer Conference
Held at La Jolla, California, July,
1973. Volume II. Proceedings of
the Discussion Group on Solar
Energy Conversion.
AD- 777 737
- *HULL, BLANCHE B. * * *
EXPLORATORY STUDY TO DETERMINE
FAVORABLE LOCATIONS IN THE UNITED
STATES FOR CONSTRUCTION OF A SOLAR
FURNACE.
AD- 699 358
- *IOSIPYAN, S. * * *
Solar and Wind Power to Be
Harnessed (Energiyu Solnitsa i Vetra
- v Upryazhu),
AD- 765 783
- *ISAMUKHAMEDORA, M. S. * * *
Semiconductor Solar Energy
Converters and the Phenomenon of
Photo Conductivity Quenching
(Poluprovodnikovye Preobrazovatelyi
Solnechnoi Energii i Yavlenie
Gasheniya Fotoprovodimosti),
AD- 743 031
- *JAMALOV, M. * * *
The Application of Phenol-
Formaldehyde Plastic Foam as
Thermal Insulation for Solar Water
Heaters (Primenenie Fenolo-
Formaldegidnogo Penoplasta u
Kachestve Teploizolyatsii dlya
Geliovodonagrevatelyi),
AD- 756 591
- *JENSEN, A.S. * * *
PHOTOEMISSIVE ENERGY CONVERSION
APPLIED RESEARCH PROGRAM
AD- 294 000
- *JOHNSON, D. L. * * *
The Performance of an Experimental
Solar Heating System.
AD-A066 699
- *JOLLY, J. A. * * *
Technology Transfer in Science,
AD- 777 737
- *JONCICH, DAVID M. * * *
A Comparison of the Actual and
Predicted Performance of a Solar
Assisted Space Heating System,
AD-A056 452
- Design of Solar Heating and Cooling
Systems.
AD-A062 719
- *JONES, G., II * * *
Energy Storing Organic
PhotoReactions.
AD-A074 915
- *JONES, GUILFORD, II * * *
Photon Energy Storage in Organic
Materials: The Case of Linked
Anthracenes.
AD-A039 702
- Photoisomerization of Bis(9-
Anthryl)Methane and other Linked
Anthracenes. The Role of Excimers
and Biradicals in
Photodimerization.
AD-A051 336
- Photosensitization Mechanisms for
Energy Storing Isomerizations.
AD-A074 968
- *KAISER, L. M. * * *
Computer Program for Design and
Performance Analysis of Navigation-
Aid Power Systems. Program
Documentation, Volume I. Software
Requirements Document.

PERSONAL AUTHOR INDEX-8
UNCLASSIFIED ZOM09

HOP-KAI

UNCLASSIFIED

AD-A047 925	33. Number 7.	SOLAR BATTERIES OF THE FUTURE
*KALMAN, GABOR	AD-A075 097	AD- 286 578
A Model for U-Shaped Solar Burst Spectra.	*KHARAZYAN, G. A.	*KONOVALOV, B.
AD- 747 033	The Heliodevice (Gelioustanovka),	Wind and Solar Power Engineering.
*KAWATH, S.	AD- 772 451	AD- 786 844
GaAs Concentrator Photovoltaic Power System Feasibility Investigation.	*KILLIAN, HARRISON J.	*KOROLEV, M.
AD-A051 851	AN EVALUATION AND COMPARISON OF POWER SYSTEMS FOR LONG-DURATION, MANNED SPACE VEHICLES.	Space Electric Power Plants. Part 2.
High Efficiency GaAs Solar Cell Development.	AD- 820 856	AD- 756 039
AD-A066 616	*KIRKPATRICK, ALLEN R.	*KOSTUK, R. K.
*KAMILDZHANOV, A. KH.	Low Temperature Fabrication of High Efficiency Silicon Solar Cells.	Evaluation of Solar Photovoltaic Arrays for Use on Marine Aids to Navigation.
Film Solar Energy Collector with Concentric Circular Seams (Plenochnyi Konsentrator Solnechnoi Energii s Krugovymi Konsentricheskimi Shrami).	AD-A061 956	AD-A074 893
AD- 755 829	*KNASEL, T. M.	*KOZOYED, LAWRENCE WILLIAM
*KARAGEORGII-ALKALAEV, P. M.	Experimental Studies of Soil Thermal Irradiation. Volume III. Design of Flux Diversion Equipment for Soil Irradiation Testing.	Solar Energy Design Improvement: A Methodology for Hydronic Flat Plate Collector Systems.
Semiconductor Solar Energy Converters and the Phenomenon of Photo Conductivity Quenching (Poluprovodnikovye Preobrazovateli Solnechnoi Energii i Yavlenie Gasheniya Fotoprovodimosti).	AD-A058 304	AD-A076 836
AD- 743 331	*KNECHTLI, R. C.	*KRISILAS, JOHN G.
*KATZ, LUDWIG	GaAs Concentrator Photovoltaic Power System Feasibility Investigation.	AN EVALUATION AND COMPARISON OF POWER SYSTEMS FOR LONG-DURATION, MANNED SPACE VEHICLES.
Interplanetary Particle Fluxes Observed by Ovs-6 Satellite.	AD-A051 851	AD- 820 856
AD- 784 520	*KO, HSIEN C.	*KULAGIN, A. I.
Interpretation of Flare-Produced Proton Spectra.	Influence of the Solar Electron Energy Distribution on the Microwave Spectrum of Gyro-Synchrotron Radiation.	MATCHING A THERMIONIC CONVERTER WITH A SOLAR CELL IN A SOLAR POWER ARRAY.
AD-A020 776	AD-A022 977	AD- 764 002
*KAUFMAN, I.	*KOLLER, LEWIS R	*KURBANGLDYEV, B.
European Scientific Notes. Volume	DEVELOPMENT OF A PHOTOEMISSIVE SOLAR ENERGY CONVERTER	HIGH-TEMPERATURE SOLAR FURNACE.
	AD- 288 650	AD- 704 754
	*KOLTUN, M	*KURTH, W. S.
	High Resolution Spectrograms of Ion-	

PERSONAL AUTHOR INDEX-9
UNCLASSIFIED Z0#09

KAL-KUR

UNCLASSIFIED

Acoustic waves in the Solar Wind.
AD-A054 912

*KUZNICKI, STEVEN M. * * *

'Water Splitting' by Titanium
Exchanged Zeolite A.
AD-A059 131

*LANCORTTI, LOUIS J. * * *

Rapid Access of Solar Electrons to
the Polar Caps.
AD- 736 430

*LANDSMAN, A. P. * * *

A Study of 'Photovolt' Generator at
High Radiation Intensity
(Issledovanie Elektricheskikh
Kharakteristik Generatorov
'Fotovolt' pri Povyshennoi
Moshchnosti Izlucheniya).
AD- 745 364

Semiconductor Photoconvertors.
AD- 753 063

*LANG, KENNETH R. * * *

Very Large Array (V.L.A.)
Observations of Solar Active
Regions.
AD-A066 780

*LANZEROTTI, L. J. * * *

Rapid Access of Solar Electrons to
the Polar Caps.
AD- 744 404

*LASZLO, T. S. * * *

THORIA SINGLE CRYSTALS GROWN BY
VAPOR DEPOSITION IN A SOLAR
FURNACE.
AD- 652 752

*LAZAREV, P. P. * * *

ENERGY, ITS SOURCES ON EARTH AND

ITS ORIGIN. PART IV.
AD- 410 932

*LEDBETTER, C. BURGESS * * *

Energy Conservation in Buildings.
AD-A034 141

*LEVERENZ, D. J. * * *

Predicting the Performance of Solar
Energy Systems.
AD-A035 608

The Performance of an Experimental
Solar Heating System.
AD-A066 699

*LEVERENZ, DONALD JAMES * * *

Design of Solar Heating and Cooling
Systems.
AD-A062 719

*LIBBY, W. F. * * *

Industrial Chemistry in Space.
AD- 720 136

*LIDORENKO, N. * * *

Space Electric Power Plants. Part
I (Litsom k Solntsu).
AD- 741 524

*LIDORENKO, N. S. * * *

Solar and Wind Power to Be
Harnessed (Energiyu Solntsa i Vetra
- v Upravlenii).
AD- 765 783

*LIDORENKO, N. S. * * *

Contemporary Status of Studies on
Direct Conversion of Solar Energy
to Electrical Energy (Sovremennoe
Sostoyaniye Issledovaniy po Priyomu
Preobrazovaniyu Solnechnoi Energii
v Elektricheskuyu).
AD- 747 293

*LIMANSKY, IGOR * * *

PERSONAL AUTHOR INDEX-10
UNCLASSIFIED Z0103

* * *
PHOTOREMISSIVE ENERGY CONVERSION
APPLIED RESEARCH PROGRAM
AD- 294 000

*LINDMAYER, J. * * *

Nonreflecting Vertical Junction
Silicon Solar Cell Optimization.
AD-A046 150

*LITYNSKI, Z. * * *

DIRECT ENERGY CONVERSION IN THE
USSR, SOVIET SOLAR CONCENTRATORS:
COMPREHENSIVE REPORT.
AD- 653 184

*LLOYD, W. W. * * *

Development of Vertical
Multijunction Solar Cells for
Spacecraft Primary Power. Volume
II.
AD-A025 719

*LOPINA, ROBERT F. * * *

Annual International Seminar of the
International Centre for Heat and
Mass Transfer (8th).
AD-A020 466

*LOPMAN, WILLIAM R. * * *

Digest of Equipment for Converting
Solar, Wind, and Geothermal Energy
into Electric Power for USN
Application Ashore.
AD-A065 221

*MAGEE, WILLIAM * * *

Proceedings of Annual Symposium
'Energy Research and Development'
(Sth) on 13-14 March 1974.
Sponsored by the American Defense
Preparedness Association.
AD-A007 799

*ALEVSKII, YU. N. * * *

KUZ-MAL

44-38861-1A

UNCLASSIFIED

The Potential of Indigenous Energy/
Resources for Remote Military
Bases.

AD-A022 829

*MCN, C. C.

The Potential of Indigenous Energy/
Resources for Remote Military
Bases.

AD-A022 829

*MURPHY, RALPH A.

Thin-Film Conducting Microgrids as
Transparent Heat Mirrors.

AD-A027 110

*NABUULLIN, F.

A SPLINTER OF THE SUN

AD- 255 369

*NAGAEVA, D. M.

WATCHING A THERMIONIC CONVERTER
WITH A SOLAR CELL IN A SOLAR POWER
ARRAY.

AD- 704 002

*NAUER, D. A.

SOLAR THERMOELECTRIC GENERATOR
SYSTEM CONCEPT AND FEASIBILITY
STUDY.

AD- 415 024

*NAY, MARSHALL A., JR

Solar Heating Retrofit of Military
Family Housing.

AD-A030 843

A Survey of Considerations for
Solar Energy Facility Applications.

AD-A049 490

*NEIDIG, DONALD F.

High Resolution Observations of
Fission Chambers in Space.

AD-A072 212

*NEU, JOHN I.

CHEMICAL PHOTOGENERATIVE SOLAR
CONVERTER EFFICIENCY.

AD- 681 757

*NICHOLAS, J.

Alternative Strategies for
Optimizing Energy Supply,
Distribution, and Consumption
Systems on Naval Bases. Volume II.
Advanced Energy Conservation
Strategies.

AD- 786 757

*NICHOLES, J.

Alternative Strategies for
Optimizing Energy Supply,
Distribution, and Consumption
Systems on Naval Bases. Volume II.
Advanced Energy Conservation
Strategies.

AD- 786 757

*NIRSCHL, JOSEPH C.

A Solar Power Radiometer.

AD-A039 995

*NORAK, MELVILLE B.

Research in Solar Energy
Conversion.

AD- 726 114

*OELBERMAN, E. J., JR

Rapid Access of Solar Electrons to
the Polar Caps.

AD- 736 430

*OELBERMAN, E. J., JR

Rapid Access of Solar Electrons to
the Polar Caps.

AD- 744 404

*OPJORSEN, R. W.

Low Resistivity-High Minority
Carrier Lifetime Single Crystal
Silicon Investigation.

AD-A077 684

*OTWIER, P. W.

LOCAL RADIATION EQUILIBRIUM
TEMPERATURES IN SEMIGRAY
ENCLOSURES.

AD- 648 011

*PAL, D.

Identification of Alternative Power
Sources for Dried Material
Processing Operations.

AD-A048 312

*PARKER, C. E.

Identification of Alternative Power
Sources for Dried Material
Processing Operations.

AD-A048 312

*PASICHNYI, V. V.

INSTALLATION FOR HIGH-TEMPERATURE
INVESTIGATIONS OF HEAT-RESISTANT
AVIATION MATERIALS AND COATINGS.

AD- 692 635

*PAULIKAS, GEORGE A.

PROPAGATION OF SOLAR PARTICLES TO
THE POLAR CAPS.

AD- 701 739

The Aerospace Corporation Space
Science Program Report to COSPAR CY
1971.

AD- 746 326

Experimental Evidence for the
Connection between the Geomagnetic
and the Interplanetary Fields as
Determined from Observations of
Energetic Solar Particles.

PERSONAL AUTHOR INDEX-12
UNCLASSIFIED
Z0V03

MON-PAU

UNCLASSIFIED

- AD- 766 715
*PAYTON, P. H. * * *
Industrial Chemistry in Space,
AD- 720 136
- *PETERSEN, CARL B. * * *
Solar Heat Source Feasibility
Study.
AD- 879 939
- *PINSON, J. D. * * *
Analysis of Remote Site Energy
Storage and Generation Systems.
AD-A074 869
- *POPKOVA, A. M. * * *
Study of Phototechnical
Characteristics of Polymer Films
Used as Transparent Coatings in
Solar Water Heaters (Issledovanie
Svetotekhnicheskikh Kharakteristik
Polimernykh Plenok, Primenyaemykh
dlya Proizvodnogo Pokrytiya v
Geliovodnagrevatelyakh).
AD- 742 111
- *POTTER, ROY F. * * *
Energy and Physics--General
Conference of the European Physical
Society (3rd) Held in Bucharest
(Romania) on 9-12 September 1975.
AD-A026 962
- *RAYSEY, JAMES W. * * *
Solar Heat Source Feasibility
Study.
AD- 879 939
- *READ, KENNETH F. * * *
Solar Heating Feasibility Study.
AD-A025 465
- *RECKART, DARWIN H., JR * * *
PERSONAL AUTHOR INDEX-13
UNCLASSIFIED Z0403
- Solar Cell Power for Field
Instrumentation at White Sands
Missile Range.
AD-A053 960
- *REED, J. J. * * *
Analysis of the Technical and Cost
Feasibility of Solar and/or Wind
Energy Systems for Coast Guard
Public Quarters.
AD-A028 332
- *REINHARDT, THOMAS E. * * *
Photon Energy Storage in Organic
Materials: The Case of Linked
Anthracenes.
AD-A039 702
- *Photoisomerization of Bis(9-
Anthryl)Methane and other Linked
Anthracenes. The Role of Excimers
and Biradicals in
Photodimerization.
AD-A051 336
- *REPIGI, DOMINIC J. * * *
An Attitudinal Study of the Home
Market for Solar Devices.
AD-A045 082
- *REYER, R. * * *
USAF Terrestrial Energy Study.
Volume III. Part 2. Energy
Conversion Systems Handbook.
AD-A057 252
- *RHEES, THOMAS R. * * *
An Attitudinal Study of the Home
Market for Solar Devices.
AD-A045 082
- *RICHTER, ROBERT * * *
Solar Collector Thermal Power
System. Volume I. Preliminary
- Technology Systems Study.
AD-A090 940
- Solar Collector Thermal Power
System. Volume II. Development,
Fabrication, and Testing of Fifteen
Foot Heat Pipes.
AD-A000 941
- *ROELOF, E. C. * * *
Prediction of Solar Energetic
Particle Event Histories Using Real-
Time Particle and Solar Wind
Measurements.
AD-A028 057
- *ROLIK, GEZA P * * *
HIGH EFFICIENCY SILICON SOLAR
Cells.
AD- 409 001
- *RUSSINI, F. D. * * *
Conference on Thermodynamics and
National Energy Problems Held at
Airlie House, Warrenton, Virginia
on Jun 10-12, 1974.
AD-A012 702
- *ROTHWELL, PAUL L. * * *
Interpretation of Flame-Produced
Proton Spectra.
AD-A020 776
- Production of Flame-Produced H2 and
He3.
AD-A025 033
- *RYAN, JOHN W. * * *
Assessment of Total Energy Systems
for the Department of Defense.
Volume 2. Appendices.
AD- 781 817
- *SALTER, R. G. * * *
The Potential of Indigenous Energy
- PAY-SAL

UNCLASSIFIED

Resources for Remote Military Bases. AD-A022 829	Solar Heating Retrofit of Military Family Housing. AD-A030 843	Solar and Wind Power to Be Harnessed (Energiyu Solntsa i Vetra - v Upryazhu). AD- 765 783
*SARRIS, EMMANUEL T. * * *	*SCHOFFER, P. * * *	*SHARBER, JAMES R. * * *
Characteristics of Electron and High-Energy Proton Flares. AD- 762 848	PHOTOVOLTAIC POWER SYSTEMS USING HIGH SOLAR ENERGY FLUXES. AD- 629 241	Solar Heating Feasibility Study. AD-A025 465
*SCARF, F. L. * * *	*SCHRANK, MARTIN P. * * *	*SHAWHAN, STANLEY D. * * *
High Resolution Spectrograms of Ion-Acoustic Waves in the Solar Wind. AD-A054 912	DEVELOPMENT OF A PHOTOEMISSIVE SOLAR ENERGY CONVERTER AD- 287 650	Characteristics of Electron and High-Energy Proton Flares. AD- 762 848
*SCHEININE, A. * * *	*SCHWARTZ, S. * * *	*SHEEHAN, P. J. * * *
Nonreflecting Vertical Junction Silicon Solar Cell Optimization. AD-A046 150	GaAs Concentrator Photovoltaic Power System Feasibility Investigation. AD-A051 851	THORIA SINGLE CRYSTALS GROWN BY VAPOR DEPOSITION IN A SOLAR FURNACE. AD- 652 752
*SCHERRER, PHILIP H. * * *	*SCOTT-MONCK, JOHN * * *	*SHEFTER, YA. * * *
An Observational Search for Large-Scale Organization of Five-Minute Oscillations on the Sun. AD-A047 842	Low Reflectivity Solar Cells. AD-A025 922	Solar and Wind Power to Be Harnessed (Energiyu Solntsa i Vetra - v Upryazhu). AD- 765 783
*SCHEUCH, KARL E. * * *	High Efficiency Solar Panel (HESP). AD-A043 382	*SHERWOOD, GERALD E. * * *
Survivability of Remote Site Alternate Energy Systems. Volume I. Survivability Analysis. AD-A078 118	*SELLERS, BACH * * *	Energy Efficiency in Light-Frame Wood Construction. AD-A071 676
*SCHMIDT, RICHARD A. * * *	Interplanetary Particle Fluxes Observed by Os5-6 Satellite. AD- 784 520	*SHIRLAND, FRED A. * * *
Assessment of Total Energy Systems for the Department of Defense. Volume 2. Appendices. AD- 781 817	*SELLERS, WILLIAM D. * * *	A CADMIUM SULFIDE SOLAR ENERGY GENERATOR AD- 101 783
*SCHMIDT, ROGER N. * * *	A Two-Dimensional Global Climatic Model. AD-A028 548	*SILVERMAN, RICHARD V. * * *
Solar Heat Source Feasibility Study. AD- 879 939	*SEMEDOV, A. * * *	SPACE POWER SUPPLY STUDY. AD- 672 772
*SCHMIESING, ROY L. * * *	The Possibilities of Selective Glass. AD-A065 845	SPACE ELECTRICAL POWER SYSTEMS FOR THE MID-1970'S. AD- 701 352
	*SHAKHOV, A. * * *	

PERSONAL AUTHOR INDEX-14
UNCLASSIFIED 20903

SAR-SIL

UNCLASSIFIED

- *SIMNETT, G. M. * * *
Relativistic Electron Events in
Interplanetary Space.
AD- 763 756
- *SIMNETT, GEORGE M. * * *
Upper Limits to the Quiet-Time
Solar Neutron Flux from 10 to 100
MeV.
AD-A015 672
- *SINGH, T. * * *
Review and Analysis of National
Energy Research and Development
Programs and Proposals.
AD-A020 794
- *SINGH, TARA * * *
Technical Review and Analysis of
National Energy Research and
Development Programs and Proposals
(Phase II).
AD-A008 887
- *SONINSKII, M. S. * * *
SOLAR ELECTRIC POWER STATIONS
AD- 299 207
- *SONI, J. S. * * *
Review and Analysis of National
Energy Research and Development
Programs and Proposals.
AD-A020 794
- *SCPER, W. G. * * *
Efficiencies of Various Methods for
Solar Energy Conversion.
AD-A042 584
- *STACHIW, J. D. * * *
Performance of Photovoltaic Cells
in an Undersea Environment.
AD-A066 385
- *STATLER, R. L. * * *
Navy Applications for Terrestrial
Photovoltaic Solar Power.
AD-A030 529
- *STELLA, P. M. * * *
High Efficiency Solar Panel (HESP-
II).
AD-A065 009
- STELLA, PAUL * * *
Low Reflectivity Solar Cells.
AD-A025 922
- *STELLA, PAUL M. * * *
High Efficiency Solar Panel (HESP).
AD-A043 382
- *STEPHENS, C.W. * * *
Low Resistivity-High Minority
Carrier Lifetime Single Crystal
Silicon Investigation.
AD-A077 684
- *STEPHENS, C.W. * * *
ENERGY CONVERSION SYSTEMS REFERENCE
HANDBOOK. VOLUME II, SOLAR-THERMAL
ENERGY SOURCES
AD- 256 973
- *STERN, ROBERT * * *
Is the Galactic Corona Produced by
Galactic Flares.
AD-A076 612
- *STEVOVICH, VLADIMIR A. * * *
Solar Energy.
AD- 778 846
- *STOFEL, EDWIN J. * * *
SOLAR CELL POWER SYSTEMS FOR AIR
FORCE SATELLITES.
AD- 654 285
- *STOUT, GORDON * * *
Assessment of Total Energy Systems
for the Department of Defense.
Volume 2. Appendices.
AD- 781 817
- *STREBKOV, D. S. * * *
A Study of 'Photovolt' Generator at
High Radiation Intensity
(Issledovanie Elektricheskikh
Kharakteristik Generatorov
'fotovolt' pri povyshennoi
Moshchnosti Izlucheniya).
AD- 745 364
- *STROTHER, LARRY W. * * *
Solar Assisted Heat Pump Study for
Heating of Military Facilities.
AD-A058 626
- *STRUBLE, A. D. * * *
Project ASTRO: An Investigation of
the Use of Solar Heating to Improve
the Performance of Polyurethane
Balloons.
AD- 762 803
- *STURMAN, IVAN * * *
A Study of Conventional and
Unconventional RADIAC Power
Sources.
AD- 721 662
- *STURROCK, P. A. * * *
Is the Galactic Corona Produced by
Galactic Flares.
AD-A076 612
- *SZEGO, GEORGE C. * * *
Feasibility of Meeting the Energy
Needs of Army Bases with Self-
Generated Fuels Derived from Solar
Energy Plantations.
AD-A031 163

PERSONAL AUTHOR INDEX-15
UNCLASSIFIED
Z0W03

SIM-SZE

UNCLASSIFIED

- *TAYLOR, DAVID G. * * *
Feasibility of Meeting the Energy Needs of Army Bases with Self-Generated Fuels Derived from Solar Energy Plantations (Appendices A, B, and C).
AD-A031 164
- *TAYLOR, DAVID G. * * *
The Step Excitation Method for Studying Reversible Excited-State Electron-Transfer Reactions: Experimental Realization.
AD-A078 144
- *TERRY, .W. * * *
UNFUELED POWER SUPPLY FOR ISOLATED BASES ON SEA ICE
AD- 263 905
- *THORNHILL, JAY W. * * *
High Efficiency Solar Panel (HESP-II).
AD-A065 009
- *TINSLEY, JOHN T. * * *
Second Interim Technical Report on USAFA Solar Test House.
AD-A045 042
- *TINSLEY, JOHN T. * * *
Third Interim Technical Report on USAFA Solar Test House Design Parameters.
AD-A060 458
- *TOBACK, JOHN P. * * *
The Application of DC-DC Energy Conversion in a Solar Energy System.
AD-A077 112
- *TOLBERT, WILLIAM A. * * *
Solar Heating Retrofit of Military Family Housing.
AD-A030 843
- *TOLKINSON, GLEN * * *
Proposal Evaluation - Ocean Thermal Gradients and Solar Ponds.
AD-A022 080
- *TOMS, R. S. * * *
FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME III. SPACECRAFT DESIGN.
AD- 804 111
- *TOMS, R. S. H. * * *
FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME I. SUMMARY.
AD- 804 109
- *TOMS, R. S. H. * * *
FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME II. MISSION ANALYSIS.
AD- 804 110
- *TREBLE, F. C. * * *
Work in UK on the Applications of Solar Cells in Space,
AD-A011 084
- *TURTLE, J. P. * * *
Rapid Access of Solar Electrons to the Polar Caps,
AD- 744 404
- *TURTLE, JOHN P. * * *
Rapid Access of Solar Electrons to the Polar Caps.
AD- 736 430
- *UMAROV, G. YA. * * *
The Application of Phenol-Formaldehyde Plastic Foam as Thermal Insulation for Solar Water Heaters (Pribimernie Fenolofornaldegidnogo penoplasta u kachestve teploizolyatsii dlya geliovodonagrevatelei).
AD- 756 591
- *UNO, F. M. * * *
High Efficiency Solar Panel (HESP-II).
AD-A065 009
- *UNO, FRANK * * *
High Efficiency Solar Panel (HESP).
AD-A043 382
- *VAMPOLA, A. L. * * *
Rapid Access of Solar Electrons to the Polar Caps,
AD- 744 404
- *VAMPOLA, ALFRED L. * * *
PROPAGATION OF SOLAR PARTICLES TO THE POLAR CAPS.
AD- 701 739
- *RAPID ACCESS OF SOLAR ELECTRONS TO THE POLAR CAPS. * * *
AD- 735 430
- *SOLAR ELECTRON ACCESS TO THE MAGNETOSPHERE. * * *
AD- 770 319
- *VASILEV, A. M. * * *
Semiconductor Photoconvertors.
AD- 753 063
- *VEYNBERG, V.B. * * *
OPTIC IN INSTALLATIONS FOR THE UTILIZATION OF SOLAR ENERGY
AD- 255 609
- *VODRASKA, K. F. * * *

PERSONAL AUTHOR INDEX-16
UNCLASSIFIED Z0M09

TAY-VOD

UNCLASSIFIED

Identification of Alternative Power Sources for Dredged Material Processing Operations.
AD-A048 312

*WADDELL, R. L. * * *

FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME I. SUMMARY.
AD- 804 109

* * *

FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME II. MISSION ANALYSIS.
AD- 804 110

* * *

FEASIBILITY STUDY OF AN ION-PROPELLED MARS ORBITER/LANDER SPACECRAFT WITH SOLAR PHOTOVOLTAIC POWER. VOLUME III. SPACECRAFT DESIGN.
AD- 804 111

*WALTON, G.

* * *

Interim Feasibility Assessment Method for Solar Heating and Cooling of Army Buildings.
AD-A026 588

* * *

*WALTON, G. N.

Predicting the Performance of Solar Energy Systems.
AD-A035 608

* * *

*WALTON, GEORGE

Market Evaluation Study: Solar Domestic Water Heaters for DOD barracks.
AD-A036 479

* * *

Investigation of the Interrelationship between Direct, Diffuse, and Total Solar Radiation.
AD-A072 986

*WALTON, GEORGE N.

* * *

Method for Estimating Solar Heating and Cooling System Performance.
AD-A026 041

* * *

Design of Solar Heating and Cooling Systems.
AD-A062 719

*WARD, CARTER J.

* * *

Solar-Powered Sun Tracker.
AD-A078 653

*WEINER, H.

* * *

Computer Program for Design and Performance Analysis of Navigation-Aid Power Systems Program Documentation. Volume II - User's Manual.
AD-A047 356

* * *

Computer Program for Design and Performance Analysis of Navigation-Aid Power Systems Program Documentation. Volume III - Programmer's Manual.
AD-A047 542

* * *

Computer program for Design and Performance Analysis of Navigation-Aid Power Systems. Program Documentation, Volume I. Software Requirements Document.
AD-A047 925

*WEITEN, E. F.

* * *

SPACE LINKAGE SYSTEM. ANALYTICAL STUDY AND PRELIMINARY DESIGN VOLUME I.
AD- 816 039

* * *

SPACE LINKAGE SYSTEM. ANALYTICAL STUDY AND PRELIMINARY DESIGN. VOLUME II. APPENDICES.
AD- 816 040

*WHITE, R. STEPHEN

* * *

Upper Limits to the Quiet-Time Solar Neutron Flux from 10 to 100 Mev.
AD-A015 672

*WILCOX, JOHN M.

* * *

An Observational Search for Large-Scale Organization of Five-Minute Oscillations on the Sun.
AD-A047 842

*WILSON, LOUIS

* * *

DODGE SATELLITE POWER SYSTEM.
AD- 669 994

*WINDINGLAND, L. M.

* * *

Market Evaluation Study: Solar Heating and Domestic Hot Water Heating in DOD Buildings.
AD-A042 178

*WINDINGLAND, LARRY

* * *

Market Evaluation Study: Solar Domestic Water Heaters for DOD barracks.
AD-A036 479

*WITTER, R. W.

* * *

Hoffman HSPP-1 Solar Converter.
AD- 786 384

*WOHLGEMUTH, JOHN

* * *

Nonreflecting Vertical Junction Silicon Solar Cell Optimization.
AD-A046 150

*WOHLGEMUTH, JOHN H.

* * *

Nonreflecting Vertical Junction Silicon Solar Cell Optimization.
AD-A064 431

*WOLDOW, A. F.

* * *

PERSONAL AUTHOR INDEX-17
UNCLASSIFIED 20:09

WAD-WOL

UNCLASSIFIED

SPACE LINKAGE SYSTEM. ANALYTICAL
STUDY AND PRELIMINARY DESIGN.
VOLUME I.
AD- 816 039

SPACE LINKAGE SYSTEM. ANALYTICAL
STUDY AND PRELIMINARY DESIGN.
VOLUME II. APPENDICES.
AD- 816 040

*WOLFF, G.

GaAs Concentrator Photovoltaic
Power System Feasibility
Investigation.
AD-A051 851

High Efficiency GaAs Solar Cell
Development.
AD-A066 616

*WOOD, E.F.

PHOTOEMISSIVE ENERGY CONVERSION
APPLIED RESEARCH PROGRAM
AD- 294 000

*WRIGLEY, C. Y.

Nonreflecting Vertical Junction
Silicon Solar Cell Optimization.
AD-A064 431

*WULFINGHOFF, D.

Alternative Strategies for
Optimizing Energy Supply,
Distribution, and Consumption
Systems on Naval Bases. Volume II.
Advanced Energy Conservation
Strategies.
AD- 786 757

*XUAN, PHAN THACH

Photosensitization Mechanisms for
Energy Storing Isomerizations.
AD-A074 968

*YATES, G. KENNETH

Interplanetary Particle Fluxes
Observed by Ovs-6 Satellite.
AD- 784 520

Interpretation of Flare-Produced
Proton Spectra.
AD-A020 776

*YEAKLEY, RICHARD

Development of Vertical
Multijunction Solar Cells for
Spacecraft Primary Power. Volume
II.
AD-A025 719

*YEFIMOV, YE

A MOTOR CONNECTED TO THE SUN
AD- 271 829

*YUKON, STANFORD

A Model for U-Shaped Solar Burst
Spectra.
AD- 747 033

*ZAVRACKY, PAUL M.

Transparent Heat-Mirror Films of
TiO₂/Ag/TiO₂ for Solar Energy
Collection and Radiation
Insulation.
AD-A007 892

*ZHAMALOV, A.

Study of Phototechnical
Characteristics of Polymer Films
Used as Transparent Coatings in
Solar Water Heaters (Issledovanie
Svatootechnicheskikh Kharakteristik
Polimernykh Plenok, Primenyaemykh
dlya Prozhachnogo Pokrytiya v
Geliovodonagrevatelyakh).
AD- 742 111

*ZIMMERMAN, W. B.

PHOTOVOLTAGIC AND THERMOELECTRIC
SOLAR ENERGY CONVERSION USING THIN

PERSONAL AUTHOR INDEX-18
UNCLASSIFIED Z0709

WOL-ZIM

FILMS,
AD- 686 496